Infection Prevention and Control Programs in Community-Based Home Visiting Nursing in Southeast Queensland, Australia: A Case Study

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ABSTRACT

In Australia, healthcare settings are required to obtain and maintain formal accreditation by the Australian Council on Health Care Standards. One area of this accreditation is infection prevention and control. In addition to accreditation, healthcare settings are required to appoint an infection control professional to coordinate the local infection control programs. In addition to these requirements, healthcare settings in Queensland are required by law to implement an infection control management plan and take reasonable precautions to minimise the risk of Healthcare-Associated Infections [HAIs] through the identification of the infection risks and measures to be taken to prevent or minimise these risks. Such efforts must be consistent with relevant national infection control guidelines for healthcare settings. The National Health and Medical Research Council [NHMRC] published the Australian Guidelines for the Prevention and Control of Infection in Healthcare in which they established six key elements of a successful infection prevention and control program. The NHMRC guidelines are considered to be fundamental because they are based on the best available evidence and address the critical aspects of infection prevention and control in healthcare settings. The NHMRC guidelines are hospital-based.

Healthcare services are now expanding to community contexts. As healthcare services extend from hospitals to the community, so do the risks of HAIs transmission. There is limited research that explores infection prevention and control programs in a community context, especially in home-healthcare services. Furthermore, the community context is different from the context of a hospital setting. It is uncontrollable, unpredictable and there is less access to essential resources for home visiting nurses to perform their jobs. Therefore, policies relevant to hospital settings need to be developed to suit the community context. This difference between community and hospital settings in the work environment context highlights the need to explore what infection prevention and control programs govern community-based home visiting nursing [CBHVN] to understand how they are structured and how they operate. The aim of this study was to examine the structures that govern infection prevention and control in community settings and to determine how they operate.

Donabedian’s framework of quality assessment (2005) was adopted as a conceptual framework to undertake a case study of CBHVN in Queensland [case studies] (Yin, 1994). The case subjects were CBHVN organisations. The context was
Southeast Queensland and the issue was infection prevention and control programs within CBHVN. The study was conducted on four different CBHVN organisations located in Southeast Queensland. In order to understand the issue, it was essential to understand how infection prevention and control programs are structured and managed in each organisation. Data were triangulated from multiple sources to enable a thorough understanding. Three different data collection strategies were used in this study: document reviews, individual interviews and focus group interviews. The documents reviewed are related to infection control and were reviewed to develop an understanding of the structure of infection prevention and control programs in each organisation and how the programs are expected to operate formally. Individual interviews with home visiting nurses and managers were conducted to explore how infection prevention and control programs actually operate and to explore the challenges faced by home-visiting nurses while implementing infection prevention and control programs in a community context. Following this, a cross-case analysis of the four organisations was conducted to identify the differences and similarities across the four organisations and to identify challenges that home-visiting nurses face while implementing infection prevention and control practices in the community context. After that, focus group interviews were conducted with home-visiting nurses to explore solutions to the issues raised from the document reviews and individual interviews. Follow-up individual interviews were also conducted with the managers to obtain their perspective on the raised issues. Finally, an initial framework for infection prevention and control programs for CBHVN was developed.

Donabedian’s theory was used as a conceptual structure for this study. The structure, processes and outcome strategies of infection prevention and control programs in CBHVN was explored in each organisation. The findings reveal that infection prevention and control programs were informally structured in CBHVN. The structure varied from one organisation to another. However, there were some common elements among all organisations. Generally, the infection control elements included: governance of infection control, infection control policies for client care, staff development and training, staff health, surveillance systems, and strategies to address environmental contexts. Infection prevention and control in the community context depended mainly on education more than the other elements. As for infection control processes, various infection control processes were implemented by each CBHVN organisation. However, there were some common processes that were used by all four
organisations, such as hand hygiene competencies, standard precautions, and evaluating staff performance. Infection control was difficult to evaluate in CBHVN due to a lack of appropriate tools for the community context. Evaluation mainly depended on client feedback and compliance with annual infection control training. There were issues with regard to implementing infection control in a community context that were raised in this study. Those issues included environmental challenges, the lack of available equipment and the lack of community-based clinical guidelines.

The findings of this study showed that infection prevention and control programs were informally and poorly structured in CBHVN. The available infection control processes developed for acute settings were not always appropriate for the community context. There were challenges that were not addressed in the available infection control policies, procedures and guidelines. Home-visiting nurses were doing their best to provide good quality care to their clients in less than optimal environments. The knowledge derived from this study is significant because it highlights the challenges and the issues that home-visiting nurses face while implementing infection control practices in a community context. Addressing those issues while developing policies and procedures for infection control and while establishing infection prevention and control programs for the community context will lead to better understanding of the difference between community-based and acute healthcare environments and the need to develop infection prevention and control programs and guidelines that are more practical, reasonable and applicable for home-visiting nurses in the community-based context.
STATEMENT OF ORIGINALITY

This work has not been previously submitted for a degree or diploma in any university. To the best of my knowledge and belief, this thesis contains no material previously published or written by another person, except where due reference is made in the thesis itself.

Ohood Felemban

20 August 2014
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<th>Acronym</th>
<th>Description</th>
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<tr>
<td>CA-MRSA</td>
<td>Community-Acquired <em>Methicillin Resistant Staphylococcus Aureus</em></td>
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<tr>
<td>CBHVN</td>
<td>Community-Based Home Visiting Nursing</td>
</tr>
<tr>
<td>EN</td>
<td>Enrolled nurse</td>
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<tr>
<td>HAIs</td>
<td>Healthcare-associated infections</td>
</tr>
<tr>
<td>HIV</td>
<td>Human Immunodeficiency Virus</td>
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<tr>
<td>HVN</td>
<td>Home-visiting nurse</td>
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<tr>
<td>ICMP</td>
<td>Infection control management plan</td>
</tr>
<tr>
<td>NHMRC</td>
<td>National Health and Medical Research Council</td>
</tr>
<tr>
<td>PPE</td>
<td>Personal protective equipment</td>
</tr>
<tr>
<td>RN</td>
<td>Registered nurse</td>
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<tr>
<td>WHO</td>
<td>World Health Organization</td>
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KEY DEFINITIONS AND TERMS

Healthcare-associated infections (HAIs) are “infections that patients acquire during the course of receiving treatment for other conditions within a healthcare setting” (Centres for Disease Control and Prevention [CDC], 2010, p.1).

Standard precautions refer to those work practices that are applied to everyone regardless of their perceived or confirmed infectious status to ensure a basic level of infection prevention and control. Implementing standard precautions as a first-line approach to infection prevention and control in the healthcare environment minimises the risk of transmission of infectious agents from person to person, even in high-risk situations (National Health and Medical Research Centre, 2010, p.21).

Transmission-based precautions are applied to patients suspected or confirmed to be infected with agents transmitted by the contact, droplet or airborne routes (National Health and Medical Research Centre, 2010, p.93).

Infection Prevention and Control Program is a health care facility or organization (e.g., hospital, long-term care, continuing complex care, home care) program responsible for meeting the recommended mandate to decrease infections in the patient, health care providers and visitors. The program is coordinated by health care providers with expertise in infection prevention and control and epidemiology (Ontario Agency For Health Protection and Promotion, 2012, p. 5).

Infection control guidelines are recommendations that are developed to establish an accepted approach to infection prevention and control, focusing on core principles and priority areas for action. They provide a basis for healthcare workers and healthcare facilities to develop detailed protocols and processes for infection prevention and control specific to local settings (National Health and Medical Research Centre, 2010).

Infection control management plan (ICMP) is defined as an official and systemic clinical governance process that is designed to enable institutions to meet their infection prevention and control obligations and to ensure the safety and quality of the services provided (Shaban & Kralik, 2011, p. 173).

Community-Based Home Visiting Nursing (CBHVN) is a nursing and healthcare service provided by CBHVN organizations that employ qualified nurses to visit clients in their own environment and provide them with a wide range of nursing and healthcare services as per their needs (Kralik & Van Loon, 2011).

Home Visiting Nurse (HVN) is a qualified nurse who works in the CBHVN profession to deliver care to clients at their homes. This includes registered nurses and enrolled nurses.

Region is a specified area that is part of a country. In this study, “region” refers to Southeast Queensland.

Community-Based Home Visiting Nursing branch is a sub-branch of a larger (usually statewide) CBHVN organisation from which CBHVN services are conducted. Branches included this study are located in suburbs of Southeast Queensland.

A Regional Manager is a qualified person who is responsible for managing all services provided by an organisation in one specific region.
A Quality Manager is a qualified person who is designated to manage the quality assurance processes of all services provided by an organisation.

A Head of CBHVN Services is a qualified person who is designated to manage the CBHVN services in an organisation.

A Branch Manager is a qualified person who is responsible for managing and operating the services provided in one CBHVN branch of a larger CBHVN organisation.

A Senior Nurse is a qualified person who is designated to supervise home-visiting nurses who provide CBHVN services to clients at their homes.
PUBLICATION ARISING FROM THE THESIS

Papers that arise from this thesis are included in Chapter 6 of this thesis.
Completing my PhD degree has probably been the most challenging endeavour of my learning pathway. I owe my enormous debt of gratitude to Allah for his gracious blessings. I am also indebted to King Abdullah bin Abdul-Aziz Al Saud, a benevolent king and father, for funding my scholarship. I earnestly thank the Faculty of Nursing of King Abdul-Aziz University for their commendable support.

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I would like to acknowledge the participating community-based home visiting organisations in Southeast Queensland, Australia for their cooperation and support. I wish to thank the participants for trusting me and sparing me some of their precious time to share with me their valued information. It would not have been possible to complete this research without your vital contribution and cooperation.

My bountiful gratitude also extends to my family. Words cannot express how grateful I am to my mother and father for all of the sacrifices that they have made on my behalf. Your earnest prayer for me has sustained me thus far. Thank you for trusting me and having faith in me. I would also like to thank my beloved sisters, brothers, sisters-in-law, grandmother, aunts and uncles. Thank you for supporting me in everything. I can’t thank you enough for encouraging me throughout my academic journey. I would like to express my heartfelt indebtedness to my beloved nephews and niece for always cheering me up. I also thank my friends and cousins (There are too many to list here but you know who you are.) for providing me with the support and friendship that I have always needed.

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CHAPTER 1 - INTRODUCTION

This study is concerned with the control, management and prevention of healthcare-associated infections (HAIs) in the community context. It examines what infection prevention and control programs govern community-based home visiting nursing (CBHVN) in Queensland and explores how these programs operate. For the purpose of this study, CBHVN is defined as nursing and healthcare services provided by qualified nurses to clients in their own environment as per their needs (Kralik & Van Loon, 2011). Home-visiting nurses attend to those clients in their own homes since patients are often too sick to leave their homes or may not have appropriate financial or personal resources to access healthcare services. Finally, the section discusses the structure of infection prevention and control programs that exist in CBHVN organizations to develop understanding of how the programs are operated and managed.

Background of the research

Infection prevention and control is a cornerstone of quality and safety in healthcare (McGoldrick, 2007; Cruickshank & Ferguson, 2008; NHMRC, 2010; ACSQHC, 2011). Preventing the transmission of HAIs is essential to healthcare efforts (Embil, Dyck, & Plourde, 2009). Healthcare-associated infections are a major risk to human health worldwide. They are a leading cause of morbidity and mortality and are increasingly a challenge for healthcare professionals (Burke, 2003; Sydnor & Perl, 2011). Studies have demonstrated the negative consequences that HAIs have on patients and their health outcomes and the additional economic costs associated with them (Graves, Weinhold, Tong, Birrell, Doidge, Ramritu, et al., 2007). In the US, two million HAIs occur annually and approximately 60,000 to 90,000 people die of these infections (Javris, 2007), costing approximately US$ 28.4 to 33.8 billion (Scott, 2009). Anderson et al (2007) estimated the number of HAIs for different types of infections such as BSI, SSI, VAP and CAUTI respectively $ 23,242, $ 10,443, $25,072, and 758. A systematic review of 200 catheter-related infections studies showed that the incidence of catheter-related bloodstream infections was 1.7 for arterial catheters and 2.7 for short-term central venous catheters (Prowle, Heenen & Singer, 2011). Pronovost et al (2006) estimated that the cost of treating central venous catheters infections is US$45,000 per patient and US$2.3 billion each year, which equates to more than the entire UK critical
care budget for 2008 (Prowle, Heenen & Singer, 2011). In Australia, there are approximately 200,000 HAIs each year, of which more than 12,000 are bloodstream infections and associated mortality occurs in up to a third of patients (Cruickshank & Ferguson, 2008). Thus, HAIs are a major issue for healthcare provision.

The adverse effects of HAIs have led to efforts for their control and prevention. The Study of Evaluation of the Efficacy of Nosocomial Infection Control Programs (SENIC) in the US by Haley et al. (1985) was ground-breaking research that spurred efforts to develop infection prevention and control programs and governance structures. The SENIC study showed that hospitals with established and coordinated infection prevention and control programs had HAIs rates that were 32% lower than hospitals without such programs. It provided a scientific foundation and impetus for modern infection prevention and control programs, especially with regard to staffing and recommended strategies and activities (Cruickshank & Murphy, 2009). The study identified five key elements of an effective infection prevention and control program, namely: (i) surveillance; (ii) policy development; (iii) education and review of clinical practice; (iv) assigning an infection control nurse to collect and analyse surveillance data and coordinate the program; and (v) active participation of an epidemiologist in the program. These remain as core elements of infection prevention and control programs in Australia and around the world today (Cruickshank & Murphy, 2009). Subsequently, researchers and clinicians in many countries and regions have conducted studies to develop infection prevention and control guidelines to assist healthcare professionals and healthcare facilities in developing effective infection prevention and control programs that could be applied in healthcare settings.

The importance of infection prevention and control programs for preventing the transmission of HAIs is well-documented (Herrick & Loos, 1996; Rankin & Kean, 2005; Mody, Langa, Saint & Bradley, 2005; Rhinehart & Friedman, 1999; Rhinehart & McGoldrick, 2006). Infection prevention and control programs vary according to the size of healthcare facilities, the type of services that are provided, the complexity of cases treated by healthcare facilities, and the presenting risks. There are some infection control elements outlined earlier that are essential to all infection prevention and control programs regardless of the size or function of the healthcare facility such as policy development, surveillance and infection control education, while other elements are optional or not relevant. Cruickshank and Murphy (2009) proposed a model for hospital-based infection prevention and control programs in Australia to promote cross-
jurisdiction consistency. This model introduced recommendations for the essential activities and structures for governance, control assurance procedures, and administration of infection prevention and control program in hospitals. The model introduced two categories of infection prevention and control programs. Both of the categories included three essential elements as follows: (i) program management and governance; (ii) infection prevention; and (iii) performance improvement and research. For each element, Cruickshank and Murphy (2009) provided recommendations for an appropriately staffed and resourced IC program including infection control practice based on sound principles of epidemiology, the role of healthcare workers and other partnerships to facilitate and support the implementation of infection prevention and control interventions, and the mechanisms and processes to ensure the implementation of and compliance with infection prevention and control interventions. However, the first category provided essential minimum recommendations for an infection prevention and control program for acute hospitals, whereas in the second category, various optional recommendations were provided, depending on the type and size of the healthcare setting and complexity of care provided. For example, the recommendations for infection control programs are different for a large hospital with a 150-bed capacity to a small hospital with a 20-bed capacity or a day-care procedure centre. This nationalised approach to standardising infection control programs in Australia facilitates the effectiveness of infection prevention and control programs in Australia aiming to prevent HAIs, reduce their cost to healthcare facilities and have a positive impact on the function of infection control.

**The research problem**

Formal healthcare has been traditionally provided in hospital settings. However, healthcare has, in recent times, evolved and some of the complex care traditionally provided in hospitals is now provided in the community (Haiduven & Ferrol, 2004). Community-based, home-visiting nursing organisations have become a major provider of healthcare (Abusalem, Mayers & Aljeesg, 2012). Patients are discharged home with central lines and other indwelling catheters, complicated and chronic wounds and intravenous medications (Kralik & Van Loon, 2011) and receive care by nurses from CBHVN organisations (Felemban, 2010). Receiving care at home has many advantages, one of them being financial as CBHVN services cost less to deliver compared to the cost of hospital-based, inpatient care (Sheppered et al, 2009). Another advantage of
CBHVN services is less disruption to patients’ routines as the services allow them to recover in the comfort and security of their own home (McKenzie, Pinger & Koticke, 2005). CBHVN services also reduce the duration of hospital stay time, which is associated with an increased risk of HAIs (Chain, 2011). Furthermore, clients receive one-on-one attention as the home-visiting nurse is taking care of one client at a time (Chain, 2011).

Despite these advantages, there are challenges associated with delivering CBHVN services. Healthcare services in the community have become more complicated and as healthcare moves into the community, so do the risks and problems associated with HAIs. HAIs are a challenge wherever healthcare is provided and are not confined to hospitals (Kralik & Van Loon, 2011). The US Centre of Disease and Control Prevention (CDC) estimated that of the two million infections annually, there were 340,000 infections, which were acquired when patients were receiving CBHVN services (Javris, 2001). A study conducted in Paris to determine the prevalence of HAIs in home care services showed that 6.1% of patients who received home care for more than 48 hours had at least one HAI and there were 6.3 infections per 100 patients. The most common site of infection was the urinary tract (50.0%), followed by the skin infections (37.9%) (Patte, Drouvot, Quenon, Denic, Briand & Patris, 2005). Some patients are discharged home with HAIs (Kenneley, 2007). Others are at the high risk of developing HAIs, especially those who are elderly and those with diabetes, renal failure, and immunosuppression. The emergence of Community-Acquired Methicillin Resistant *Staphylococcus Aureus* (CA-MRSA) and other drug-resistant organisms further complicates CBHVN services (Kenneley, 2010).

The rapid expansion of the CBHVN industry has meant that the setting-specific standards required for providing high-quality and safe healthcare such as those related to infection control are underdeveloped (Kenneley, 2010). The available standards for CBHVN are reliant mostly on hospital standards (Rhinehart & McGoldrick, 2006). However, the community context is different to hospital settings (Kenneley, 2010). Working in the community means that healthcare practices take place within the client’s environment, and outside a hospital or institutional settings (St John & Keleher, 2007). CBHVN care is provided wherever people live or present for care; it might be in remote, rural or urban areas and in some cases, community centres and parks where clients are homeless (Felemban, 2010). This diversity means that home-visiting nurses do not have the same benefits as their hospital colleagues with regard to the conditions
of their working environment. Additionally, home-visiting nurses often work alone and away from immediate resources or help from other healthcare colleagues and they are more independent in working and making decisions. Furthermore, CBHVN clients are often clinically vulnerable to infections as they receive care in unstructured, unpredictable, and less-than-ideal environments (Felemban, 2010; Scott, 2001; Jarvis, 2001; Kenneley, 2007; Rhinehart, 2001; Kenneley, 2010). Thus, infection control guidelines that are hospital-based may not be ideally suited for the community context and the challenges that lie therein. Home-visiting nurses experience challenges with respect to HAIs including the lack of a standardised framework to structure infection prevention and control programs and the lack of trained specialist infection control professionals in the community (Shaban & Kralik, 2011). Hence, there is a compelling need for frameworks for infection prevention and control programs that are tailored to suit the community context.

Healthcare-associated infections are largely preventable by implementing effective infection prevention and control programs and guidelines (Rhinehart & McGoldrick, 2006). Infection prevention and control programs aim to protect healthcare workers and clients from acquiring infections by minimising the transmission of HAIs during healthcare delivery in order to promote the quality of care and safety for healthcare workers and their clients. Hence, developing effective infection prevention and control programs and compliance with guidelines is associated with high-quality and safe healthcare through the prevention and reduction in HAIs (NHMRC, 2010). Importantly, infection prevention and control programs should be context-specific (Friedman & Rhinehart, 2000; Rhinehart & McGoldrick, 2006; Swanson & Jeans, 2011). That is, they must relate directly to the environment in which care is provided. Developing effective infection prevention and control programs that are specific to CBHVN is necessary for preventing the transmission of HAIs in that context (Rankin & Kean, 2005). However, research into implementing infection prevention and control programs and developing standardised frameworks has focused largely on hospital-specific contexts (Cruickshank & Murphy, 2009; Haley & Shachtman, 1980; Stevenson, Murphy, Samore, Hannah, Moore, Barbera, Houck, & Gerberding, 2004; Warren & Kollef, 2005; Sydnor & Perl, 2011). There is little published research that examines how infection prevention and control programs are implemented in the community context. Published studies that have examined infection prevention and control in the community context have been undertaken as part of community settings such as a day-
care and long-term healthcare facilities (Jenkinson et al, 2006; Nicolle, 2001). Existing studies have focused on hand hygiene interventions or examined multiple infection prevention practices including hand washing, the use of standard precautions, surface disinfection, waste management and sterilisation practices (Mody, Langa, Saint & Bradley, 2005; Rhinehart, 2001; Scott, 2001). Few published studies have explored the structure and operation of infection prevention and control programs in CBHVN. Hence, there is a dire need to explore the structure and processes of infection prevention and control programs in CBHVN to identify the issues and challenges of their implementation, which may aid in the development of a comprehensive framework for infection prevention and control programs that are community-based.

**Aim of the study**

The aim of this study was to determine what structures govern infection prevention and control in CBHVN in Australia and to understand how they operate. In particular, the aim of the study was to examine the standards and guidelines that govern infection control and investigate how these operate and in doing so identify the challenges of implementing infection prevention and control programs in the community context. This research would elicit information on infection prevention and control programs for CBHVN and inform the development of a framework for infection prevention and control programs in the community context.

**Research question**

What structures govern infection prevention and control programs in community-based home-visiting nursing in Australia, and how do they operate?

**Significance of the research**

As noted earlier, the community context presents significant challenges with respect to infection prevention and control for healthcare such as developing infection prevention and control programs, implementing infection-control practices and monitoring HAIs. HAIs are an important consideration for CBHVN services. Therefore, exploring how infection prevention and control program are structured and managed in CBHVN services is essential to public health, safety and quality healthcare. This study would shed new light on how infection prevention and control programs are constituted and operated in CBHVN. This in turn may better inform healthcare workers, stakeholders and policymakers who strive to ensure safe and high-quality care is
provided to clients who receive CBHVN services. Moreover, the findings will have national and international significance, informing infection prevention and control knowledge for other CBHVN organisations. Understanding the structures of infection prevention and control programs for CBHVN contexts and how they operate adds to the evidence-base to guide future development of infection prevention and control programs. The framework may unify and combine efforts of infection control professionals to achieve better quality and safer healthcare for clients in CBHVN services.

**Structure of the thesis**

This thesis consists of seven chapters. This chapter provides a background to the study, the research problem, the aims and the significance of the study. Chapter 2 provides a review of the literature with respect to the research problem and question. It examines the discipline of infection prevention and control in safe and high-quality healthcare, infection-transmission processes, infection-control standards and infection-control programs with respect to the research question. In Chapter 3, the methodology chosen for the study, including the conceptual framework, methods, data collection procedures and data analysis plan, and the process of identifying infection prevention and control programs elements are discussed. Chapter 4 provides the initial findings of the study, focusing on the structure, processes and outcome evaluation of infection prevention and control programs in four CBHVN organisations. Each organisation is referred as a case subject. The findings gleaned from document reviews and initial follow-up interviews are presented for each (case) organization individually according to the identified elements of infection prevention and control programs. The outcome evaluation strategies are also presented. Following this is a cross-case analysis, which was conducted across the four (cases) organisation to identify the differences and commonalities among the cases in addition to the issues of implementing infection control in CBHVN endured by the case participants. Chapter 5 outlines the findings from the focus group interviews and the follow-up individual interviews that were conducted to discuss the issues of implementing infection control as identified in the cross-case analysis. Chapter 6 presents analysis and discussion on the findings of this study as presented in six papers that have been prepared for publication. Each paper addresses one of the identified infection control elements in relation to the findings and literature. Chapter 7 presents a framework for infection prevention and control programs for CBHVN in view of the discussion of the elements discussed in the six
papers in Chapter 6. The thesis then closes with a conclusion that relates to the aim of the study and research problem.
CHAPTER 2 – LITERATURE REVIEW

Introduction

This chapter presents a critical review of the literature that relates to the research problem and question. The aim of this study was to explore what infection prevention and control programs govern CBHVN in Australia and to develop an understanding of how they operate. The literature review was conducted in two phases. In this chapter, only the literature that was identified in Phase 1 is discussed. The subsequent literature review for phase two is discussed in Chapter 6 within each paper. Chapter 2 comprises six sections. Firstly, it provides an overview of the importance of infection prevention and control for providing high-quality and safe healthcare services. Following this is an explanation of infection and disease transmission processes and standards and transmission-based precautions in infection control. The explanation adds to the discourse on the aetiology of HAIs and how to prevent their transmission. A review of infection prevention and control programs and their origins is then presented. It is important to understand how infection prevention and control programs were initially developed and how they were improved over time in order to grasp how they are now structured and operate to achieve their aims. The review will also include a discussion of infection control management plans (ICMPs) and standard frameworks for infection prevention and control programs. Infection prevention and control programs in CBHVN are then discussed, critiqued and critically analysed in relation to the research question. The chapter concludes with a summary of what the existing literature makes available concerning the research problem for this study and demonstrates the gap in the literature that this research will address.

The literature review included published studies on the research question. The search strategy entailed two phases. The search in the first phase involved only publications reported in the English language from 1980 to 2011. As mentioned earlier, more recent literature (the second phase) is discussed in Chapter 6. The period 1980-2011 was specifically selected given that CBHVN emerged as a speciality discipline during that time, particularly in relation to the provision of clinical care in the community setting as we know it today. The following medical subject headings (MeSH) terms were identified: infection prevention and control program, infection control activities, infection prevention, infection control, community setting, home
healthcare, nursing, community-based nursing, home care and home care setting. The search included computerised electronic databases, namely CINAHL, PsychINFO, MEDLINE, Web of Science, and the SCOPUS databases. The search was established by grouping and combining terms together to gain the best access to literature. In addition, a manual search of related journals was conducted to identify any other relevant articles that may have been missed. The search included all articles related to infection prevention and control programs and infection control practices, with a particular focus on those in a community setting. Google Scholar™ was used for an internet search for any relevant journal articles, grey literature reports and websites on the subject matter.

**Infection prevention and control for quality healthcare**

As noted in Chapter 1, infection prevention and control is a cornerstone of contemporary healthcare (Kenneley, 2010). The goal of this discipline is to prevent the transmission of HAIs and to control and manage them when they occur to ensure safe and high-quality healthcare. The risk of the transmission of infections such as HAIs is well documented (NHMRC, 2010). Scientific research has demonstrated the impact of HAIs on the economics of healthcare facilities and morbidity and mortality rates (Umscheid, Mitchell, Doshi, Agarwal, Williams & Brennan, 2011) in addition to the psychological effects on patients and their families due to prolonged hospitalisation (Kralik & Van Loon, 2011).

Healthcare-associated infections are, however, preventable through effective infection control measures. The importance of infection prevention and control for providing safe and high-quality healthcare has long been acknowledged (NHMRC, 2010). The relationship between microorganisms and infection and thus its relationship to HAIs was recognised in the late 1840s when Ignaz Semmelwies discovered that the higher rate of haemorrhagic fever among women whose labour had been attended by medical students who had previously conducted autopsies and not washed their hands (Best & Neuhauser, 2004). Semmelweis’ discovery led to substantial improvement in healthcare outcomes. From his discovery and the work of others such as Pasteur, Hooke, Lister, Virchow and Nightingale emerged the need for strategies to investigate, control and prevent transmission of infections. Studies of the prevention and control of transmission of infections (Bennett, 1994; Burke, 2003; Cruickshank & Murphy, 2009; Morrison, 2001; World Health Organization [WHO], 2008) flourished and informed
guidelines for healthcare settings, which emerged to inform development of infection prevention and control programs. These guidelines aimed to prevent and control the transmission of infections and ensure the provision of safe and high-quality healthcare services to clients. Infection prevention and control programs are concerned with various aspects that relate to the transmission of infections within healthcare, including the prevention, monitoring, and management of HAIs (WHO, 2008). In order to understand how infection prevention and control programs operate, it is necessary to comprehend the transmission process of infection. The transmission process provides a basis for understanding how to control and prevent transmission and at the same time, it lays a foundation for identifying appropriate standards and strategies to break the infection transmission process. The process of transmission of infections is explained in detail in the next section.

**Infection and disease transmission**

Understanding the scientific basis of disease is fundamental to the basic standards of infection prevention and control. For infection and disease to occur, there must be a series of events that are called the *chain of infection* (Wilson, 2006). It comprises six components that are depicted in Figure 1. For infection to occur, the chain of infection must be complete. Thus, understanding this chain and the modes of transmission of infectious organisms helps the healthcare worker to understand the basic processes of infection control. Additionally, this knowledge enables the healthcare workers to understand how to break this chain and prevent the transmission of microorganisms.
The transmission of infection can be broken at any of the points within the chain. For example, a healthcare worker can identify the causative agent and provide the proper therapy to treat or eliminate it, such as antibiotics. Identifying the type of organism helps to determine its mode of transmission and prevent the transmission of the causative agent by applying a two-tiered system that is fundamental to the management and control of infections known as standard precautions and transmission-based precautions. This two-tiered system is examined next.

<table>
<thead>
<tr>
<th>Component</th>
<th>Explanation</th>
<th>Example</th>
</tr>
</thead>
<tbody>
<tr>
<td>Causative Agent</td>
<td>Refers to the microorganism that is capable of causing a disease</td>
<td>Viruses, bacteria</td>
</tr>
<tr>
<td>Reservoir</td>
<td>Refers to the habitat where the microorganism may live, grow and multiply.</td>
<td>Environment, humans and animals</td>
</tr>
<tr>
<td>Portal of Exit</td>
<td>Where the microorganism finds their way out through secretion and excretion of the body.</td>
<td>Infected lesion, coughing, and sneezing</td>
</tr>
<tr>
<td>Mode of Transmission</td>
<td>A microorganism could pass on from person to person via three modes: contact, droplet and airborne. Contact is the most common mode of transmission: the microorganism can be transmitted either by direct transmission, which usually involves transmission by the hands of the healthcare workers or via contact with blood or body substances, or indirect transmission, which involves the transfer of an infectious agent through a contaminated intermediate object or person. Droplet transmission: the microorganism is transmitted through coughing, sneezing or talking and during certain procedures such as suctioning. Droplets are infectious particles larger than 5 microns in size. Respiratory droplets transmit infection over short distances, limited by one metre or less. Airborne microorganisms are small airborne droplets less than 5μ in size transmitted by an aerosol containing infectious agents that remain infective over time and distance. Aerosols can be generated by coughing and sneezing and spread over long distances by air currents inhaled by susceptible individuals who have not had any contact with the infectious person. These small particles can transmit infection into small airways of the respiratory tract.</td>
<td>Methicillin Resistant Staphylococcus aureus (MRSA), and Vancomycin Resistant Enterococcus (VRE) Mumps, rubella, and meningococcus Mycobacterium tuberculosis, varicella virus (chickenpox), and measles</td>
</tr>
<tr>
<td>Portal of Entry</td>
<td>The microorganism may enter the other person’s body through openings or cuts.</td>
<td>Respiratory tract, genitourinary tract, gastrointestinal tract, or broken skin</td>
</tr>
<tr>
<td>Susceptible Host</td>
<td>A microorganism is also affected by host susceptibility in order to cause a disease; some people are more prone to acquire infection than others.</td>
<td>People who are: elderly, infants, burned and immune-compromised patients</td>
</tr>
</tbody>
</table>

Figure 1 – Chain of infection (Wilson, 2006)
Standard precautions and transmission-based precautions

Standard precautions and transmission-based precautions constitute a two-tiered system that is considered fundamental to infection prevention and control. Each healthcare worker must understand and apply these standards to prevent and control the transmission of infections. Standard precaution practices are considered the basic level of infection control (NHMRC, 2011). They include hand hygiene practices, the use of personal protective equipment, appropriate handling and disposal of sharps and clinical waste (which includes linen handling), blood and body fluid spillage and the use of aseptic techniques. Hand hygiene practices include washing and disinfecting hands before and after patient contact and washing hands immediately if contaminated with blood or bodily substances. Personal protective equipment such as gloves, gowns, masks, eye protection and face shields are used according to the anticipated exposure. For example, gloves are worn when there is contact with blood or bodily substances; while protective gowns, masks, protective eyewear and face shields are worn when there is a likelihood of splashes of blood or bodily substances. Sharp objects and medical waste must be disposed of according to the clinical waste regulations of the government of each state of Australia (NHMRC, 2011). Standard precautions are applied to blood, all bodily substances, secretions and excretions except sweat, regardless of whether or not they contain visible blood, non-intact skin or mucous membranes.

Transmission-based precautions are used when a patient is diagnosed or suspected of being colonised with epidemiologically significant organisms. Precautions are tailored to the particular infectious agent involved and its mode of transmission (NHMRC, 2011). Transmission-based precautions address three types of transmission: contact, droplet, and airborne. According to NHMRC (2011), contact precautions are designed to reduce the risk of transmitting pathogens by direct contact, which involves direct or indirect modes. Droplet precautions are applied to patients diagnosed with or suspected of being infected with pathogens that can be transmitted by infectious droplets. Finally, airborne precautions are applied to patients diagnosed with or suspected of being infected with pathogens that can be transmitted by the airborne route (NHMRC, 2010).

Applying the scientific basis of diseases is critical to the success of infection prevention and control. However, infection prevention and control is not merely
matter of implementing the two-tiered system. It is more complex. It incorporates a range of practices based on the core principles of hygiene, cleanliness and sterility (NHMRC, 2010), which are coordinated together in a systematic way to achieve its aims. Examples of these practices are environmental cleanliness, equipment sterility, occupational health and safety for healthcare workers, waste management, routine monitoring of infections and continuous education and training for healthcare workers (NHMRC, 2010). Understanding of the scientific basis of diseases assists in building up infection prevention and control programs that aim to prevent infections and their transmission during healthcare services. Infection prevention and control programs are complex and include many elements. These elements provide a basis for healthcare workers and healthcare facilities to develop infection prevention and control programs that are specific to their local healthcare settings. The next section will provide an overview of infection prevention and control programs in order to understand how they are structured and how elements of infection prevention and control programs are identified.

**Infection prevention and control programs**

An effective infection prevention and control program is an important element for providing safe and quality services in healthcare systems. Infection prevention and control programs aim to prevent and reduce the transmission of infection and the spread of infectious disease using the principles of the epidemiology of infectious disease transmission to plan, implement and evaluate infection control strategies (Centre for Healthcare Related Infection Surveillance and Prevention [CHRISP], 2010a). In order to understand how infection prevention and control programs operate, it is essential to first understand how they are structured by understanding their elements and their relationship to an infection control management plan (ICMP).

Infection prevention and control program elements generally cover the following areas: systems and governance for infection prevention, control and surveillance, infection prevention and control policies and protocols, managing patients with infections and cleaning, disinfection and sterilisation (Wilson, 2006). These elements have been determined after many years of research. As the majority of this research was conducted and published in the US, this historical review includes how infection prevention and control programs have developed in the US.
The need for infection control measures in the U.S healthcare system was realised in the mid-20th century after World War II when several outbreaks of *Staphylococcus Aureus* among newborns were reported in hospitals in the US (Rhinehart & Friedman, 1999). Teams of healthcare workers including nurses, physicians and microbiologists investigated the outbreaks and developed measures to prevent further outbreaks (Rhinehart & McGoldrick, 2006). A primary part of their work was measuring and monitoring the frequency of the infection or surveillance. Surveillance is defined as “the ongoing, systematic collection, analysis and interpretation of health data essential to the planning, implementation, and evaluation of public health practice, closely integrated with timely dissemination of these data to those who need to know” (Centres for Disease Control and Prevention [CDC], 1988).

Formal infection control in hospital settings began in 1958 when The American Hospital Association recommended all hospitals to undertake surveillance of nosocomial infections. In 1970, the CDC recommended establishing infection prevention and control programs and training for nurses to specialise in infection control. These nurses were responsible for investigating and reporting infections (Cruickshank & Murphy, 2009). Later, in 1974, as mentioned in Chapter 1, the SENIC study was conducted and a surveillance system was introduced in many large hospitals. In 1976, the role of infection control nurses and their surveillance activities were enhanced when the Joint of Commission and Accreditation of Health Organization (JACHO) included infection prevention and control programs as a standard requirement for accreditation of hospitals (Rhinehart & McGoldrick, 2006). Surveillance systems and assigning an infection control nurse to collect and analyse surveillance data were the two main elements of early infection prevention and control programs.

Early infection prevention and control programs in the US were focused mainly on surveillance activities due to the lack of the research informing infection prevention and control strategies (Rhinehart & McGoldrick, 2006). Surveillance activities enabled benchmarking across healthcare facilities (National Nosocomial Infections Surveillance [NNIS] system, 2003). Additionally, surveillance provided data on the risks associated with invasive medical devices, which helped the CDC to develop guidelines and standards for the prevention of HAIs, which were published in *Isolation Techniques for Use in Hospitals* (CDC, 1970). This guidance included infection control practices related to patient care practices such as hand washing, wound care, insertion and care of catheters, and isolation precautions. Thus, surveillance systems helped in developing
initial policies and procedures for the prevention of transmission of HAIs and are now one of the main elements of infection prevention and control programs.

As infection prevention and control programs were developed, their structures were refined. Attention to occupational hazards, staff education and quality improvement were featured prominently. Furthermore, in 1983, the Association for Professionals in Infection Control (APIC) published the *APIC Curriculum for Infection Control Practices*, which supported infection prevention and control programs and assisted individuals in preparing for certification in infection control (Soule, 1983). The APIC established eight essential areas for infection control practice including: (i) patient care practices; (ii) microbiology; (iii) infectious diseases; (iv) occupational health; (v) sterilisation and disinfection; (vi) epidemiology and statistics; (vii) education; and (viii) communication and management. These areas provide a foundation for the professional practice of infection control in all parts of healthcare and are essential elements for the structure of any infection prevention and control program.

In Australia, formal hospital-based infection prevention and control programs began in the early 1970s when the Australian Council on Healthcare Standards (ACHS) introduced its accreditation program. For healthcare facilities to obtain accreditation, they were required to have formal infection prevention and control programs and appoint an infection control nurse to coordinate the program (Cruickshank & Murphy, 2009). In Queensland, the State Government released infection control guidelines in 1999 to ensure that infection prevention and control programs were nationally accepted (CHRISP, 2011). These guidelines encompassed recommendations that were developed to assist different types of healthcare services to design infection prevention and control programs that incorporated nationally accepted infection control elements and aimed to minimise infection risk through the application of basic infection control principles. In 2000, the CHRISP in Queensland was founded. Its purpose was to inform activities aimed at the prevention of HAIs through the surveillance of HAIs, to monitor the socio-economic effects of HAIs and to conduct behavioural research with a focus on hand hygiene (CHRISP, 2011). Subsequently, the ACHS published *Fundamentals for Infection Control Services* in 2001, which suggested specific activities that hospitals could apply to identify assess to and control of HAIs (Cruickshank & Murphy, 2009). In 2006, the Australian Commission on Safety and Quality Health Care (ACSQHC) was formed. One of its goals was to develop a national approach to guide efforts to improve safety and quality across the healthcare system in Australia by reducing HAIs by
building healthcare workers’ capacity to be able to implement recommended strategies for infection control (Cruickshank & Murphy, 2009). Developing national infection control guidelines was one of the initiatives of the commission’s healthcare-associated infection program.

In 2010, NHMRC published the *Australian guidelines for the prevention and control of infection in healthcare*, in which they established six key elements of a successful infection prevention and control program. They are: (i) prevention and control measure practices; (ii) surveillance; (iii) policies and procedures; (iv) risk management; (v) education and training; (vi) quality improvement, monitoring and review. These elements are consistent with those developed in the US. These elements are considered critical because they play a major role in the elimination and prevention of the transmission of infections (NHMRC, 2010). The NHMRC guidelines are considered to be fundamental because they are based on the best available evidence-based guidelines in Australia that address the critical aspects of infection prevention and control in healthcare settings (NHMRC, 2010).

Recently, the ACSQHC (2011) developed the *National Safety and Quality Improvement Health Service Standards* (NSQHS), which expounded on 10 standards. Of these, Standard 3 aims to prevent patients from acquiring HAIs and provides a framework for employing evidence-based strategies to control, manage and prevent HAIs. Standard 3 consists of six criteria. They are: (i) governance and systems for infection prevention control and surveillance; (ii) infection prevention and control strategies; (iii) managing patients with infection and colonisations; (iv) antimicrobial stewardship (v) cleaning, disinfection and sterilisation; (vi) and communicating with patients and carers. Implementation strategies accompany each of the criteria. The strategies can be used and tailored according to the size, structure, and complexity of healthcare delivery services. The suggested strategies for Standard 3 were developed in line with the best evidence found in the NHMRC guidelines (ACSQHC, 2011).

This literature review illustrates how infection prevention and control programs have evolved and developed over time. The US literature is similar to the Australian literature in the sense that they contain some common elements of infection prevention and control programs. These common elements are surveillance systems, program management, policies and procedures, staff education and training, prevention and control measures and quality improvement. However, this literature is specific to
hospital-based settings. However, it is noteworthy to highlight that for infection prevention and control programs to operate successfully within an organisation, they should be organised using a tailored management plan. Infection control management plans will be discussed next.

**Infection control management plans**

An infection control management plan (ICMP) is defined as an official and systemic clinical governance process that is designed to enable institutions to meet their infection prevention and control obligations and to ensure the safety and quality of the services provided (Shaban & Kralik, 2011). Infection control elements are based on the structures of the infection prevention and control program. ICMPs help healthcare organisations to organise infection control elements and coordinate infection control strategies in a systematic way. ICMPs enable healthcare professionals to ensure that infection prevention and control programs provide safe and quality care service. Thus, ICMPs focus on the implementation of infection prevention and control programs.

The formalisation of infection prevention and control practice into programs and plans is a relatively recent enterprise in Australia. In 2005, in Queensland, the *Public Health Act 2005* established a legal duty for healthcare facilities and persons involved with the provision of healthcare services to take reasonable precautions to minimise the risk of infection. This legal duty was achieved by establishing a requirement for healthcare facilities to have an ICMP, which identifies the infection risks at the facility and detail the measures to be taken to prevent or minimise the risks (CHRISP, 2010b). In response, the CHRISP published infection control guidelines in which they determined five main elements for any management plans for hospital-based infection prevention and control programs. These elements are: management, clinical practices, consultancy, education, surveillance and research (CHRISP, 2010b). For example, ensuring that there is a surveillance system in place that measures the risks and aims to reduce the rate of HAIs is one element. Ensuring that healthcare workers are educated on basic infection control, policies and practices is another important element. The CHRISP also established that ICMPs for non-hospital settings should be comprised of ten elements that are important for preventing and controlling infections in a community context, which will be elucidated after a discussion on the management plan.
Frameworks for infection prevention and control programs and plans across Australia

In Australia, infection prevention and control programs have varied and have been inconsistent across the states and territories. Infection prevention and control programs should be consistent and unified in order to work to their maximum effect to give reliable data on infection prevention and control activities. Without a standardised framework, the ability of programs to systematically prevent the transmission of HAIs is limited. As mentioned in Chapter 1, to assist with an attempt to unify the structure and function of infection prevention and control programs across the states, Cruickshank and Murphy (2009) proposed a framework of Australian infection prevention and control programs. This overarching framework recommended essential elements of infection prevention and control programs and appropriate staffing and resourcing of infection prevention and control programs. Their recommendations include infection control practices based on epidemiologic principles, the role of healthcare workers and others, partnerships that facilitate and support implementation of basic and specific infection prevention and control interventions, and mechanisms and processes to ensure implementation of and compliance with infection prevention and control standards (Cruickshank & Murphy, 2009). However, this framework is hospital-based and it may not be appropriate for community-based settings.

The structure and application of infection prevention and control programs in hospital settings has been the focus of research (Haley & Shachtman, 1980; Sydnor & Perl, 2011; Warren & Kollef, 2005). However, as mentioned previously, HAIs are not only limited to hospitals. They occur wherever healthcare is provided. Thus, infection prevention and control programs should be tailored to the context of the healthcare delivery setting whether it is hospital or community-based. There is a need to study infection prevention and control programs in community settings to develop an appropriate framework. This study was carried out to explore infection prevention and control programs in a community setting, particularly CBHVN. In the following section, infection prevention and control programs in CBHVN will be discussed.

Infection prevention and control programs in community-based home visiting nursing

As discussed in Chapter 1, healthcare delivery has traditionally been provided in hospitals. However, over the last 20 years, the trend of healthcare delivery has shifted
away from hospitalisation to the provision of care in community settings (St John & Keleher, 2007). The context of providing care services in the community varies considerably and includes primary healthcare services, domiciliary nursing, aeromedical services and CBHVN services (St John & Keleher, 2007). Each specialty practice area requires an infection prevention and control program that reflects its needs, circumstances and contexts apart from the risks and challenges pertaining to the transmission of HAIs therein.

The issues and challenges relating to infection prevention and control for CBHVN practices have been the subject of existing research. Some studies have focused on a single aspect of the practice such as hand hygiene. Others have explored a group of practices. The challenges in previous literature include surveillance systems (Manangan, Pearson, Tokars, Miller & Jarvis, 2003; Rosenheimer, 1995; Rosenheimer, Embry, Sanford, & Silver, 1998); hand hygiene practices (Bennett & Mansell, 2004; Felemban, St John & Shaban, 2012; Gould et al, 2000; Kenny, 2002; Nakano, Ono & Yasumura, 2002); standard precautions (Bennett & Mansell, 2004; Rankin & Kean, 2005); disinfection and sterilisation (Dacey & Dufficy, 1998); isolation (Huckery, 2007); environmental cleaning (Kenneley, 2010; Rankin & Kean, 2005); and sharp handling and waste management (Rankin & Kean, 2005; Dacey & Dufficy, 1998; Bennett & Mansell, 2004). All of these studies have focused on particular infection control practices in community settings. They have shed light on how some infection control practices are applied to community settings and have explored the difficulties or pitfalls of the implementation of some of these practices. However, none of these researchers have examined the structure, functioning and content of infection prevention and control programs more broadly. Understanding how infection control practices are applied to a community context is crucial, but understanding how all these practices are applied and coordinated in the form of a systematic program to prevent HAIs is vital for broader efforts to maintain safety and quality healthcare.

**Program elements in community-based home-visiting nursing**

Infection prevention and control in community-based CBHVN services must be planned and managed in a comprehensive way to ensure integration with all components of an organisation (Rhinehart & Friedman, 1999b). The programs may be developed and managed according to the scope of services delivered, the patient population and their needs, and the risks of HAIs therein. The programs should be part of wider quality management and performance improvement as they share similar goals,
which are to improve quality, reduce risk, and deliver safe services. Rice and Jordan (1992) argued that the establishment of a well-planned infection prevention and control program in community settings is crucial for quality patient care and employee safety. Based on their experience, they provided a commentary on the primary components of an infection prevention and control program. They stressed that infection prevention and control programs in community settings should include policies and procedures for patient care, an exposure control plan, staff education, monitoring of staff compliance with the program, patient education, and waste management. Likewise, Bennett (1994) recommended six critical elements for developing comprehensive, effective infection prevention and control programs for CBHVN organisations as follows: surveillance for infections, infection control education, consultation, epidemiological investigation, quality improvement activities, and policy and procedure development. The above mentioned studies of Rice and Jordan (1992) and Bennett (1994) indicate that the elements of infection prevention and control programs in a community setting in the early 1990s consisted of: (i) policies and procedures for patient care; (ii) occupational health; (iii) monitoring of staff compliance with the program; (iv) patient and staff education on infection control; (v) quality improvement activities; and (vi) consultation. These elements can guide exploration of the structure of infection prevention and control programs in CBHVN in Australia.

There have also been studies since Rice and Jordan (1992) and Bennett (1994) that examined the design, development and implementation of infection prevention and control programs for CBHVN. Two publications discuss the structure and management of infection prevention and control programs in CBHVN. One by Herrick and Loos (1996) and the other by Bellen (1996). The first study was an early descriptive study published in 1996 when the Visiting Nursing Association and Hospice of Northern California developed an infection prevention and control program for home care. The program consisted of six essential elements identified from the instructions of the Occupational Safety and Health Administration (OSHA) for the safety of healthcare workers and from the accreditation standards of the Joint Commission on Accreditation of Healthcare Organizations (JCAHO). The elements involved: infection control and exposure policies and procedures, surveillance procedures, mandated staff education, employee infection prevention, program oversight, and program documentation. The main criteria of this model were that the program was overseen by a committee consisting of a clinical manager, a quality management manager, an education manager,
clinical staff, human resources staff and material management staff (Herrick & Loos, 1996). The committee was responsible for implementing and managing an infection prevention and control program, which entailed setting the program goals, developing and updating policies and procedures, designing the surveillance system, analysing infection patterns and making recommendations in relation to infection control. Herrick and Loos (1996) proposed using an infection control committee to manage infection control, arguing that the advantage of a committee is that it will bring different expertise together and distribute the work over a number of people. This approach is now fundamental to managing current infection prevention and control programs (Damani, 2003; JCAHO, 2004b). Elements that structured the infection prevention and control program in Herrick and Loos’ (1996) study corresponded with some elements that had been recommended by Rice and Jordan (1992) and Bennett (1994) such as infection control policies and procedures, occupational health, surveillance systems and staff education. This research confirms that these four elements are fundamental components of infection prevention and control programs in CBHV N. The main feature of Herrick and Loos’ (1996) study was that the infection prevention and control program was managed by a group of experts rather than only one designated person. The model was applied by the VNAHC and it proved to be effective in controlling infections and improving practices.

The second study was conducted by Bellen (1996), who described a model for a comprehensive infection prevention and control program in home-visiting nursing that used the cause-and-effect approach. The model was used at the Genesee Region Home Care in New York. The model is composed of five main categories of infection control, namely: materials, methods, equipment, people, and measurement systems. Each category has supporting elements. The categories and their elements are identified in Figure 2.
In this home-visiting setting during the study, an infection control nurse and a quality management department managed the program. The efficiency of this model for detecting and preventing infection transmission in CBHVN services contexts was demonstrated. Genesee Region Home Care in New York applied this model in response to detecting an increase in the number of urinary infections in December 1994 and January 1995. The infection rate reached 0.31 infections per 1000 days of care in December and in January, it exceeded 0.33 infections per 1000 days of care. The infection control nurse and quality management department reviewed records of the patients who had urinary infections in December and January and found an area of limitation, which was nursing education with regard to catheter care. Accordingly, in-service education sessions on infection control principles and on catheter care were commenced and the agency newsletter was used to increase staff awareness of infections and their causes (Bellen, 1996). Subsequently, the urinary infection rate decreased to 0.13 infections per 1000 days of care in February 1995. The main feature of this study was that the author suggested using the cause-and-effect approach in preventing and reducing the transmission of infections among patients and staff members in CBHVN. In this study, infection prevention and control programs were structured under five categories, namely: (i) materials; (ii) methods; (iii) measurement systems; (iv) people; (v) and equipment as shown in Figure 2. Bellen’s (1996) study highlights important issues in infection prevention and control programs such as the availability of infection control equipment including personal protective equipment, spill kits and sharps disposable containers. Furthermore, an infection control nurse and the quality management department managed the program, rather than an infection control committee. Bellen demonstrated the efficacy of these approaches and strategies.

Figure 2 — Comprehensive infection prevention and control program (Adapted from Bellen, 1996, p.7)
The above mentioned models for infection prevention and control programs in the two studies by Herrick and Loos (1996) and Bellen (1996) were each applied in a single CBHVN organisation. No other published study was found in which these two models were used. Both studies were carried out in the US; therefore, the results of the studies may not be applicable to Australia considering the fact that Australia has a different healthcare system. Moreover, the studies were conducted 15 years ago and the findings may not reflect or be consistent with contemporary infection control standards, processes, strategies and practices. However, the infection control elements in both studies are useful for exploring the infection control elements that are currently implemented in the infection prevention and control programs of CBHVN organisations in Australia.

As infection control in the CBHVN services industry continues to develop, several organisations have published recommendations for structuring infection prevention and control programs in CBHVN (Friedman, Barnette, Buck, Ham, Harris, Hoffman, Johnson, Manian, Nicolle, Pearson, Perl, Solomon, 1999; Health Canada, 2004). In the US, JCAHO adopted standards that addressed infection prevention and control programs in home care (JCAHO, 2004b). APIC and the Society for Healthcare Epidemiology of America (SHEA) collaboratively developed a paper (Friedman et al, 1999) that outlines four elements for infection prevention and control programs in non-hospital settings as follows: (i) develop and recommend infection control policies and procedures; (ii) obtain and manage data for surveillance of HAIs; (iii) address issues related to occupational health and intervene to prevent infection; (iv) educate staff, patients and their caregivers with regard to infection control practices and principles. Each element includes essential infection control strategies that should be addressed in the related element (Rhinehart & McGoldrick, 2006). Elements of infection control and the related strategies that were reviewed are summarised in Table 1, which was developed by the researcher. Both organisations, the APIC and SHEA, considered these four elements to be essential for structuring infection prevention and control programs in non-hospital settings.
Table 1 – Infection control elements of the Association for Professionals in Infection Control and Epidemiology [APIC] and the Society for Healthcare Epidemiology of America [SHEA] (Rhinehart & McGoldrick, 2006)

<table>
<thead>
<tr>
<th>Infection Control Elements</th>
<th>Strategies of Infection Control Elements</th>
</tr>
</thead>
</table>
| Infection Control Policies and Procedures | • Hand hygiene  
• Standard precautions and the use of personal protective equipment  
• Transmission-based precaution  
• Provision of intravenous therapy  
• Infection control practices related to wound care, respiratory tract care and urinary tract care  
• Application of a clean and sterile technique  
• Food preparation and provision of central therapy  
• Cleaning and disinfecting of medical equipment and supplies  
• Handling and transport of medical waste management and laboratory specimens |
| Surveillance System | • Assess patient population  
• Select the outcome or process for surveillance  
• Develop or select definitions for HAIs  
• Develop data collection methods  
• Calculate the infection rate and analyse data  
• Apply risk stratification methods  
• Use data and information for risk reduction and quality improvement |
| Occupational Health and Safety | • Initial assessment and health history  
• Confirmation of immunity and provision of vaccine  
• Initial and annual TB tests, as required  
• Identification of occupational exposure and follow-up of non-blood borne pathogen exposure  
• Post-exposure prophylaxis for exposure to blood borne pathogen  
• Exclusion form patient care activities  
• Surveillance for occupational health risks |
| Staff Education | • Role of infection control in home care (patient safety, patient care, occupational health)  
• Patient care practices including all the points mentioned in infection control policies and procedures  
• Role of surveillance  
• Occupational health risks  
• An exposure control plan |

The paper published by APIC and SHEA (Friedman et al, 1999) outlines infection control strategies that should be included in each of the above mentioned four infection control elements. For example, the APIC and SHEA paper (Friedman et al, 1999) identifies the type of infection control policies and procedures that should be established with regard to patient care, the components of surveillance systems, types of diagnostic tests and physical examinations required to maintain safe and healthy staff, and the types of information that need to be provided to educate staff with regard to infection control. These infection control practices provided by APIC and SHEA (Friedman et al, 1999) are useful for exploring the infection control strategies that are currently implemented in the infection prevention and control programs of CBHVN organisations in Australia.

APIC also recommends that CBHVN organisations assign an infection control practitioner to act as an infection control resource to manage all routine infection control matters (Rhinehart & McGoldrick, 2006). APIC suggests minimum
qualifications for individuals who manage infection control programs. Specifically, APIC suggested that a registered nurse with experience and knowledge of clinical care with a special interest in infection control is a suitable candidate for that role (Friedman et al, 1999). In addition, APIC suggests a list of responsibilities expected of a person who manages infection prevention and control programs in CBHVN organisations. The responsibilities of the leader of an infection prevention and control program should include: (i) to develop and maintain policies and procedures for infection control that are related to occupational health and patient care; (ii) serve an organisational resource for infection control practices; (iii) perform surveillance of HAIs; (iv) facilitate infection control education; and (v) assist in identifying risk reduction projects for infection control (Friedman et al, 1999). These APIC recommendations are useful for exploring the role of infection control coordinator in CBHVN in Australia as they provide recommendations for the activities and responsibilities of an infection control professional, which would assist in coordinating infection control programs in a more systematic manner.

There have been efforts to address infection control issues in the CBHVN services in Australia. For instance, in response to moving healthcare delivery to the home, the Queensland Government published the *Infection Control Manual for Home Care Services* in 2009. The manual provides guidelines for infection control principles that CBHVN services workers are required to follow as they perform their duties (Geary, Whitta & Tylor, 2009). The guidelines include standard precautions and transmission-based precautions, waste handling, staff health and food handling. The manual, however, does not provide any recommendations with regard to infection prevention and control program structures, plans and management in CBHVN services settings.

In summary, the literature shows that Rice and Jordan (1992) and Bennett (1994) recommended a number of critical elements for infection prevention and control programs for CBHVN services. Herrick and Loos (1996) and Bellen (1996) proposed different models for infection prevention and control programs that were applied to the CBHVN context. Herrick and Loos (1996) proposed that infection prevention and control programs should be managed by an infection control committee. Bellen (1996) suggested using a cause-and-effect approach to prevent and reduce the transmission of infections. Similarly, several organisations such as APIC, JCAHO, and SHEA have published recommendations for structuring infection prevention and control programs in community settings (Rhinehart & McGoldrick, 2006). Clearly, previous studies and
organisations’ recommendations have provided different sets of elements for structuring infection prevention and control programs. There were some consistent elements between the studies. Infection prevention and control program elements that the studies agreed on were as follows: infection control policies and procedures, surveillance systems, occupational safety, education of staff, consultation, and research and quality improvement. This indicates that these elements are crucial for any infection prevention and control program in CBHVN. Thus, current best practice should include these elements in the design of any infection prevention and control program for the community context. These elements were used to assist in identifying how infection prevention and control programs and plans are currently structured and implemented in CBHVN in this study.

**Infection control management plans in community-based home-visiting nursing**

As asserted previously, ICMPs are essential to ensure the effectiveness of infection prevention and control programs (CHRISP, 2010b). However, ICMPs are relatively new and exist mainly in hospitals. This study was carried out to explore how infection prevention and control programs operate in CBHVN. As stated previously, CHRISP (2009) has developed a general ICMP for non-hospital settings that contains ten elements as follows: (i) hand washing and hand hygiene; (ii) personal protective equipment; (iii) management of blood/body fluid exposures; (iv) infection control and employee health; (v) immunisation; (vi) environmental hygiene; (vii) pre-treatment assessment of infection control risk; (viii) non-reuse of single use items and reprocessing; (ix) delegation of responsibility for infection control; (x) investigation of infection-control incidents. However, the applicability of this ICMP for community care has not been examined systematically. There has been no information available with regard to the application of this ICMP in a community setting. It is still not clear if this ICMP properly fits with community settings, in particular with the CBHVN context. Hence, to understand how infection prevention and control programs operate in CBHVN, there is a need to examine how ICMPs are used to manage infection prevention and control programs in the CBHVN and how they operate.

**Significance and limitations of the literature and existing research**

This study was conducted to delve into the infection prevention and control programs that govern CBHVN in Australia, including how they operate. The community context presents significant challenges with respect to developing infection
prevention and control programs, implementing infection control practices and monitoring HAIs. Infection control, management and prevention require appropriate and effective infection prevention and control planning. Infection prevention and control programs have been broadly and extensively addressed in the literature for many years. Nevertheless, most of this literature focuses on infection control, management and prevention programs in institutional healthcare facilities. HAIs are a primary concern in providing CBHVN services. Most of the studies found in the literature were conducted in the US. Most of the published guidelines and recommendations have been based on the US healthcare system. However, the nature of infection prevention and control programs in Australia may be different to the nature of such programs in the US and the published guidelines may not be suitable for the Australian health care system. An infection control manual has been published by the Australian Government (CHRISP, 2011). However, this manual did not provide any guidelines with regard to structuring and operating infection prevention and control programs in CBHVN. Infection prevention and control programs in CBHVN are still under-researched in the Australian context. Therefore, exploration of how infection prevention and control programs are structured and managed in the CBHVN service is essential to public health and the safety and quality of healthcare provision.

The existing literature examines the application of infection control practices in CBHVN. However, the structures and operation of infection prevention and control programs in CBHVN have not been the subject of systematic, sustained research. The literature reveals few studies that discuss the structure of infection control and management in a CBHVN context. This review of the literature unveils two studies that examined the development of comprehensive infection structures and their operation in CBHVN (Herrick & Loos, 1996; Bellen, 1996). However, both studies were conducted in the US and are outdated, thus previous studies may not be pertinent to contemporary circumstances of CBHVN in the Australian context. It is noteworthy to point out that no study has explored infection prevention and control program structures and operations in CBHVN in the Australian context. The literature is largely silent on infection prevention and control programs in the community context, particularly in CBHVN in Australia. Therefore, current infection prevention and control program structures and their operation in CBHVN in the Australian context are still not clear.
Conclusion

This chapter has reviewed the existing literature in relation to infection prevention and control program development, operation and management in both hospital and community-based settings. The literature review demonstrates that infection prevention and control programs in the community context, particularly in CBHV in Australia, are still largely unexplored. The next chapter will describe the study design and methods that will be used to explore infection prevention and control programs in CBHV in Australia.
CHAPTER 3 - RESEARCH DESIGN AND METHODOLOGY

The purpose of this study was to explore infection prevention and control programs that govern CBHVNs in Australia and how they operate. This chapter consists of three sections. First, the proposed conceptual structure for the study, namely Donabedian’s framework for quality assessment (Donabedian, 2005) will be presented. This framework was selected because it enabled the researcher to explore the structures, processes and outcomes of infection prevention and control programs and plans in community settings. Second, the research design adopted for this study and a justification of the approach are elucidated. Finally, access to the field, recruitment processes, data collection processes and analytical strategies are outlined, including ethical considerations.

The conceptual framework for the study

Infection prevention and control programs are informed by quality management theories, which are concerned with patient safety and quality improvement (Handler, Issel & Turnock, 2001; Pittet, 2006). Infection prevention and control programs rely on outcome-based approaches to justify changes in structures or processes. Donabedian’s (2005) framework for quality assessment has been used widely as an approach to assess quality in health care. It provides a patient safety framework that permits an examination of how good structures and processes can lead to positive outcomes (Agency for Health Research and Quality, 2010). Donabedian’s framework has three indicators—structures, processes and outcomes—that are used to evaluate performance in healthcare service delivery. A focus on these indicators enables the determination of the quality of performance by ensuring that the best strategies have been chosen and applied in the most professional way. Donabedian (2005) defined structures as the organisational resources of an organisation, processes as what is done or provided, and outcomes as what is achieved. These three indicators are interconnected, meaning that good structures promote good processes and good processes in turn lead to good outcomes. For example, a well-structured infection control program leads to good processes for preventing and controlling the transmission of HAIs, which ultimately leads to positive outcomes of high quality and safe healthcare, as shown in Figure 3. In other words, proper structures and organised processes are essential to achieve outcomes.
Donabedian’s framework was selected to guide this study because it provides a structure–process–outcome model for quality assessment. This study explored the structures of infection prevention and control programs that govern CBHVN in order to determine how they operate to prevent infections to foster high-quality and safe healthcare services to their clients. The study adopted the three components of Donabedian’s framework for the inquiry and explored the mechanisms that are implemented in infection prevention and control programs in order to evaluate the quality of healthcare services outcomes so as to ensure safe and high-quality services in a community context. Hence, Donabedian’s framework provided a suitable conceptual framework to guide this research.
Figure 3 illustrates how Donabedian’s framework was used to explore the structures (essential elements of infection prevention and control programs) and processes (the strategies used to manage and coordinate the elements) of infection prevention and control programs to achieve their outcomes. The outcome of the quality assessment process is high-quality and safe healthcare services. Thus, the way in which infection control outcomes were reviewed and fed back into infection control plans was also investigated.

The case study methodology

Case studies have been used for research purposes in many disciplines. Many well-known researchers such as Stake (1995), Merriam (1998a), Simons (2009) and Yin (2009) have established definitions, approaches and techniques for organising and conducting case study research. The purpose of a case study is to investigate and describe a phenomenon, especially when it is unexamined or poorly understood (Yin, 1994). According to Yin (2009), case study research is considered to be a useful empirical approach when the researcher wishes to investigate a particular phenomenon within its real-life context. Case study approaches are applied especially when ‘how’ or ‘why’ questions are being proposed about a contemporary phenomenon that the researcher has no control over and the boundaries between the phenomenon and its context are not clear. According to Khon (1977), case study methodology enables in-depth investigation that provides an understanding of a complex phenomenon by describing the phenomenon and exploring new issues and areas for development. This enables the researcher to provide a detailed analysis of the phenomenon under investigation. Case studies are considered a strong research method when a holistic, in-depth analysis is required (Baxter & Jack, 2008). Furthermore, case study research is generally more concerned with processes in context rather than the effectiveness of outcomes and focuses on discovery rather than confirmation (Neale, Thapa & Boyes, 2006).

Stake (1995) proposed that case studies are not a methodological choice, but rather a choice of the object to be studied. Yin (1994) suggested that case study inquiry is a comprehensive research strategy that covers the “logic of design, data collection, techniques and specific approaches to data analysis” (p.14). According to Yin, a case study as a research strategy:
…copes with the technically distinctive situations in which there will be many more variables of interest than data points, and as one result relies on multiple sources of evidence with data needing to converge in a triangulating fashion, and as another result benefits from the prior development of theoretical propositions to guide data collection and analysis (p. 13)

Therefore, the case study approach has the unique strength of dealing with a variety of evidence sources, including documents, interviews, artefacts and observations (Zainal, 2003), thereby providing the researcher with a more rounded picture of the phenomenon, and particularly infection control processes in this study, since many sources of evidence are used (Gummesson, 1991). Thus, this methodology results in more accurate and representative conclusions compared to conclusions made from a study based on a single source of evidence. In this study, three different sources were used: documents, individual interviews and focus group interviews. Detailed information on why these sources were chosen and how these sources were used are explained later in this chapter.

This study sought to explore what infection prevention and control programs govern CBHVN in Australia and how the programs operate. As outlined in Chapter 2, there is little published research into infection prevention and control programs in CBHVN, particularly in Australia. Thus, case study approach was chosen as the design element for this study because it would: (i) enable the exploration of how infection prevention and control programs for CBHVN are structured (what elements constitute infection prevention and control programs); (ii) enable insight into infection prevention and control program processes (what management plans are used and how they are organised); and (iii) reveal how outcomes are used to support quality processes within CBHVN services organisations in Australia. Case study methodology enabled understanding of how infection prevention and control programs are structured and how they operate in the CBHVN context and generate new knowledge, which could improve infection control policies and practices. It could also contribute knowledge that informs the development of a contemporary framework for infection prevention and control programs in the CBHVN context.

**Types of case studies**

There are different types of case study research methodologies that reflect the purpose of a particular study (Yin, 2009). Yin (2009) provided three different types: descriptive, explanatory and exploratory case studies. Yin’s classification was considered in relation to this study. Yin’s (2009) descriptive case study approach
provides a description of a phenomenon within its context. However, in this study, the researcher aimed to do more than just describe a phenomenon. Rather, the intent was to critically review and analyse existing programs and plans to identify important elements of infection control structures and processes. Moreover, the researcher endeavoured to identify issues and difficulties related to implementing infection prevention and control programs and plans in CBHVN settings.

Explanatory case studies are suitable for causal investigations within their context (Yin, 2003). This approach is used to explain the course of events and relate or analyse how things are happening or why they happened. For example, Campbell and Ahrens (1998) conducted a study on 22 communities to compare the effectiveness of different community services for victims of sexual assault and rape. The explanatory model of case study was used to provide understanding about why different community programs were effective. Explanatory case studies have been used in clinical practice to confirm findings or validate theoretical models from previous studies. For example, Tyack and Ziviani (2003) proposed a model to investigate functional outcomes for children who sustained burns. The study results underlined the impact of psychological characteristics on functional outcomes in respect to the severity of the burn. While explanatory case study research can be used to validate a model and confirm findings (Fisher & Ziniani, 2004), this study was not intended to be a causal study to confirm previous findings or replicate a previous study.

Exploratory case study research is used to explore new fields of research when the researcher has a little or no available background information (e.g. frameworks, theories) that clarifies a specific phenomenon. Yin (2003) argued that exploratory case studies are used where little is known about phenomena so as to provide a prelude for further research and development. The aim of this study was to explore what infection prevention and control programs govern CBHVN and how they operate. There has been little research into infection prevention and control programs in community settings. Limited information is available on what governs infection prevention and control programs or how they are structured and operated in community settings, particularly in the Australian setting. Few published studies have examined the structures and operation of infection prevention and control programs and plans in community settings. Yin’s exploratory approach was adopted as a guide to develop an in-depth understanding of infection prevention and control programs in CBHVN in Australia.
Defining the case

Identifying what the case is and what the researcher will investigate is an important part of case study research design. Yin (2003) asserted that identifying case boundaries by definitions and context is essential for the researcher to remain within the scope of the study. He identified a case as a unit of analysis and argued that a case could be anything: it could be a single individual or it could be an event or entity such as a program, an implementation process or a decision. Yin (2003) stated that defining the unit of analysis occurs after specifying the primary question of the research study. By applying Yin’s approach to this study, the phenomenon of interest is infection prevention and control programs that govern CBHVN. This phenomenon was chosen because infection prevention and control programs in CBHVN are still not well understood.

In coming to understand what infection prevention and control programs govern CBHVN and how they operate in Australia, it is necessary to define the boundaries of the case. Thus, it was required to choose a geopolitical area containing CBHVN agencies. The Southeast Queensland region in Australia was selected as the boundary of the study. Southeast Queensland was chosen for several reasons. First, Southeast Queensland is a specific geopolitical region where home-visiting nursing is considered as a single professional practice. Second, while many other Australian states are dominated by one home-visiting nursing provider, Southeast Queensland has multiple home-visiting nursing agencies or cases which provide home and community care services to their clients. These agencies all work under the Home and Community Care (HACC) Program, which is a central element of the Australian Government’s aged care policy, providing support and community care services to the aged and people with disabilities and their carers (Queensland Health, 2011). Third, Southeast Queensland has played a leading role in infection prevention, control and management within Australia. The Queensland Government has legislatively required all healthcare institutions to have an infection control program and management plan established in their institutions. These characteristics made Southeast Queensland a suitable context to conduct this case study. The above mentioned reasons provided the basis for exploring and understanding how different agencies have developed and implemented their infection prevention and control programs and plans within a single, bounded context.

Case studies can be based on single-case or multiple-case design. The unit of analysis or case is used in case study research to yield greater understanding about the
phenomenon of interest. Yin (2009) stated that multiple-case study design is used to examine several cases to reveal or understand differences and similarities between cases. Thus, multiple-case studies have the advantage of providing richer information and stronger analytical conclusions. In this study, the unit of analysis or case is the individual CBHVN organisation. As mentioned above, the phenomenon of interest is the infection prevention and control programs that govern CBHVN. This study used the multiple-case study design because the researcher used more than one CBHVN organisation to gain a better understanding of how infection prevention and control programs are structured and how they operate in the community context. Investigating various organisations enabled the researcher to explore a range of infection prevention and control programs and plans and examine different infection control structures and processes within a single bounded geopolitical and professional context. This methodology provided information about various approaches to developing, managing and implementing infection prevention and control programs and plans in CBHVN organisations operating in a single geopolitical area. This methodology also generated richer data and enabled in-depth understanding of the challenges of implementing infection prevention and control programs in the community context.

The CBHVN organisations participating in this study were chosen because of their similar characteristics. They are all major organisations located in Southeast Queensland. They were all privately owned, but were supported by Australian Government funding (Queensland Health, 2011). These agencies provided a range of flexible, responsive and coordinated, basic support and healthcare services to assist their clients to maintain independence in living in their own homes. The range of services offered by CBHVN organisations in Southeast Queensland included: domestic and social support, personal care and in-home respite healthcare. Furthermore, these healthcare services were provided by professional nurses who were employed by the CBHVN organisations. Methods used to explore infection prevention and control programs in CBHVN are explicated in the next section.

**Methods**

This study aimed to examine what infection preventions and control programs govern CBHVN in Southeast Queensland and how infection prevention and control programs and plans are structured and operated. This section provides information on the data gathering plan used in this study including: the chosen data sources for this
study, the processes for selecting participants, access to the field, recruitment processes for agencies and participants, data collection procedures for each data source, data analysis strategies used to analyse collected data and approaches for developing a framework for infection prevention and control programs tailored to CBHVN.

**The data-gathering plan**

The data-gathering process was guided by the research question and by an outlined data-gathering plan. Donabedian’s (2005) conceptual framework and Yin’s (2009) method of multiple-case study research were adopted to guide this study. Developing a clear data-gathering plan was very important because it assisted the researcher to organise collected data in a logical fashion and reduce the chances of being overwhelmed by information (Yin, 2003). In this study, the researcher was the main instrument for data collection and analysis (Yin, 2003). She was responsible for collecting data to interpret, review and generate meaningful conclusions. Before commencing data collection, the researcher identified what she wanted to find, what information she was looking for and what she hoped to uncover (Merriam, 1988a). Therefore, in this study, the researcher collected data from appropriate sources by employing a planned strategy to access the field and to implement field procedures. Table 2 provides the plan that the researcher developed to guide the data collection process based on Donabedian’s theory.

**Table 2 – Data gathering plan**

<table>
<thead>
<tr>
<th>Component</th>
<th>Aim</th>
<th>Data Sources</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Structures</strong></td>
<td>Identify the structure and elements of infection prevention and control programs. Elements explored: Infection control policies and procedures, surveillance systems, occupational safety, education of staff, consultation, research and quality improvement processes</td>
<td>Document review Individual interviews</td>
</tr>
<tr>
<td><strong>Processes</strong></td>
<td>Infection control program processes ↔</td>
<td>Individual interviews Focus groups</td>
</tr>
<tr>
<td></td>
<td>Perceptions of home-visiting nurses of the program</td>
<td></td>
</tr>
<tr>
<td><strong>Outcomes</strong></td>
<td>Mechanisms used to ensure the provision of quality and safe healthcare and how to evaluate infection prevention and control programs and plans</td>
<td>Documents Individual interviews</td>
</tr>
</tbody>
</table>

In order to examine the structure of infection prevention and control programs for CBHVN agencies, the data-gathering plan was guided by the literature review
including findings by Rice & Jordan(1992); Bennett(1994); Bellen (1996); Herrick & Loos( 1996); Rhinehart & Friedman(1999) and Rhinehart & McGoldrick, (2006). For example, the critical elements for structuring infection prevention and control programs were identified as follows: (i) infection control policies and procedures; (ii) surveillance systems; (iii) occupational safety; (iv) staff education on infection control; (v) consultation and (vi) evaluation of infection prevention and control programs and quality improvement. In this study, these elements guided data gathering and analysis together with elements of infection prevention and control programs and plans specific to the participating CBHVN organisations. The nature and type of infection control management plans used to coordinate infection prevention and control programs and how the programs are organised and implemented were explored. There was a focus on the governance of infection prevention and control programs in each CBHVN organisation in terms of structure, process and outcome. In relation to outcomes of infection prevention and control programs, the mechanisms used by CBHVN organisations to ensure the provision of high-quality and safe healthcare services and how they evaluate the outcomes of their programs was examined. It should be noted that in this study, the strict or evaluative assessment of the efficacy of infection prevention and control programs was not conducted. Rather, an examination of the strategies for how outcomes are evaluated and used within each participating CBHVN organisation was explored. This approach was used because this study focused on governance and frameworks for practice rather than the evaluation of the effectiveness of specific infection control strategies or actual practice.

**The cases and data: accessing the field**

To answer the research question in this study, CBHVN organisations that provide CBHVN services, located in Southeast Queensland were invited to participate in this study upon ethics approval. The researcher approached four CBHVN organisations and invited them to participate in the study. The process for selecting the types of documents to be reviewed and the inclusion criteria for participants, the recruitment process for agencies and participants and data collection strategies for each data source are explained in more detail in the following sections.

According to Merriam (1998a), the use of multiple data-collection sources in a triangulated manner in case study research is considered a major strength of this approach as evidence is converging from different sources, resulting in more convincing
conclusions. Yin (2003) suggested six major sources of data, which are: documentation, archival records, interviews, direct observation, participant observation, and physical artefacts. Therefore, to gain rich data on how infection prevention and control programs are implemented in CBHVNs, the researcher selected the following sources: documentation, individual interviews and focus groups. These sources were chosen to ensure data triangulation to give a more comprehensive picture of the agencies’ infection control governance and structures. The reasons for choosing each data source is described later. The researcher considered undertaking observations to support the data gathered from interviews and document review. Observation was only to be used to observe particular events, processes or issues such as infection control practices that were necessary for the researcher to observe in the field to gain a clearer picture of descriptions by the interview and focus group participants. However, observation was not used, because the collected data from the other three sources were sufficient.

The processes for selecting documents and participants

Processes for selecting data sources included selecting and accessing data sources (documents and participants) that assisted in informing and illustrating how infection prevention and control programs are structured and operated (Patton, 2002). To achieve this goal, a purposive sampling strategy was employed. Documents and participants were chosen for the research based on their ability to provide comprehensive information on how infection prevention and control programs and plans operate in CBHVNs. Documents were selected based on relevance to the infection prevention and control program structure and functions in CBHVN organisations.

The inclusion criteria for participants included people who were expected to be knowledgeable about infection prevention and control programs in CBHVN organisations. Therefore, organisation managers, infection control coordinators, home-visiting nurses were included in this study. The inclusion criteria for documents and participants for individual interviews and focus groups are detailed next. Access to documents in relation to infection control was requested. The participants who fulfilled the inclusion criteria were recruited into the study for individual interviews and focus groups.

The inclusion criteria for documents were documents related to infection control such as infection control manuals, policies and procedures, surveillance reports,
management plans, clinical forms, quality improvement plans, educational plans and statistical reports. Reviewing these types of documents assisted in collecting information on how infection prevention and control programs are structured and what type of management plans are used to operate infection prevention and control programs in CBHVN organisations. For example, reviewing client admission charts clarified if assessment of infections was routine in the admission process.

The inclusion criteria for individual interviews and focus groups were determined for two groups of participants. The first group included managers while the second group included home-visiting nurses. The managers are staff designated to oversee infection prevention and control programs within the targeted organisations. The participants may or may not have had specialist education in infection control, but they were included because they could furnish the researcher with details on current infection prevention and control programs and operation processes in CBHVN organisations. Interviewing this group assisted in addressing the objective of determining the structure of infection prevention and control programs and in exploring the expected processes and actions regarding the prevention and management of HAIs within the organisations. The second group of participants, namely home-visiting nurses, involved registered nurses and enrolled nurses working full-time or part-time within the targeted CBHVN organisations since nurses are the predominant caregivers in CBHVN services. The second group was interviewed to give them an opportunity to express their thoughts and experiences of how infection prevention and control programs function within their own agencies and to discuss the issues and challenges of implementing infection prevention and control programs and plans in the community context.

The same inclusion criteria were used for selecting participants for focus groups. Focus groups were conducted to discuss issues related to infection control arising from the document review and individual interviews. Focus groups were used to obtain perspectives and opinions on the analysis of data from the individual interviews and to obtain perspectives on how infection prevention and control programs and plans could be improved in the community context. Issues related to infection control were discussed to explore opinions and solutions. The recruitment process for each component of the study (documents, individual interviews and focus groups) is explained in the next section.
The recruitment processes

Recruitment for each component of the study began after the ethics approval from the HREC at Griffith University (Appendix 1) was granted. More detailed information on ethical issues related to the conduct of the study is discussed below. Each component of the study had individual recruitment processes. Recruitment processes included the recruitment of agencies and access to their documents, participants for individual interviews and participants for focus groups. The recruitment process for each component of this study is explained next in more detail.

Recruitment of agencies and access to documents

The researcher approached four CBHVN organisations and invited them to participate in the study. The confidentiality and privacy of the participating agencies and the participants was maintained. Initial contact was made with the organisation managers personally and via an invitation letter (Appendix 2), which was sent to the director of nursing of each of the CBHVN organisations. Information about the study such as the purpose, processes, benefits and risks of the study was explained and included in a participant information sheet attached to the invitation letter (Appendix 3). After obtaining preliminary, in-principle approval to participate from the CBHVN director of each CBHVN organisation, the researcher applied for ethics approval to the ethics committee of each organisation. Each organisation had individual ethics approval procedures and processes. After obtaining official approval from the ethics committee of each organisation (Appendices 4, 5, 6, 7), the researcher again contacted the manager of each organisation to arrange for an appointment to obtain their official formal consent for participation (Appendix 3, Part B).

At the first meeting with each organisation manager, the researcher made it clear that consent would be an ongoing process at each stage of the study. It was explained that consent would be sought and negotiated with organisation managers and participants for each component of the study. It was also explained that each component of the study would have an individual recruitment process, information sheet, and consent form. Prior to participation in each component of the study, information about the research, the commitment required for participating in the study and its processes were explained to the participants. The risks involved in participating in the study were also explained. Information sheets were provided to the participants of each component of the study (Appendix 3) and confidentiality was assured.
Following organisational consent, access to organisation documentation related to infection control was requested from the organisation managers. Access to documents was individually negotiated with each organisation’s manager (Appendix 3, Part C). The researcher only reviewed documents that were approved by each organisation’s manager. Confidentiality was assured and no individual patient or client records were accessed for this study, although forms used for initial client admission and client care were reviewed.

**Recruitment of participants for individual interviews**

A time to attend a staff meeting was arranged with the organisation managers to recruit home-visiting nurses to participate in the individual interviews. A poster that included information about the study and contact numbers of the research team was also used to promote the study to potential participants (Appendix 8). The poster was provided to organisation managers, who were asked to place it on their staff noticeboard to encourage healthcare providers to participate in the study.

Two groups of participants from each organisation were invited to participate in the individual interview component. The first group included staff who oversaw the infection control programs in their agencies, such as managers or infection control representatives. The researcher communicated with them by sending them an email and then speaking with them personally to provide an explanation of the study, including the risks and benefits. They were invited to participate in the study. The second group of participants included home-visiting nurses. Home-visiting nurse participants were recruited through an invitation to attend a regular staff meeting. Information about the study was provided and the required commitment for participating in that component of the study and the processes of the study were explained. The risks involved in participating in the study were explained and confidentiality was assured. The prospective participants had an opportunity to discuss the study, direct any questions they had to the researcher and read information about the research in the information sheet. Those who were interested were contacted to negotiate a time and place for an interview. After that, the information sheet and consent form (Appendix 9) were emailed to the participants. The researcher did not inform others within each organisation about who had agreed or not agreed to participate. The interview took place onsite in each organisation. At the time of the interview, the participants were asked to sign a consent form (Appendix 9, Part B) and at the end of the interview, the
participants were asked to fill in a demographic data form (Appendix 9, Part C). The researcher also notified the participants that after analysing individual interviews, they would be invited to participate further in focus groups. The researcher informed the participants that she might also request to undertake a follow-up interview with them, if necessary. The interviews were audio-recorded with the consent of the participants and the transcripts were preserved for the analysis process.

**Recruitment of participants for the focus groups**

The focus groups involved home-visiting nurses to discuss issues related to infection control that had arisen from the document review and individual interviews. Home-visiting nurses were chosen to obtain their perspectives and opinions on how infection prevention and control programs and plans could be improved in the community context. After analysing data from the individual interviews as discussed above, the researcher recruited participants for the focus groups by requesting a meeting with the home-visiting nurses at a meeting (such as a normal staff meeting) at each organisation, or prospective participants were approached individually. The researcher explained that she wanted to discuss issues related to infection control that had arisen from the individual interviews. Confidentiality issues were discussed with the participants. In particular, the researcher informed the participants that she could not guarantee confidentiality because of the nature of focus group discussions, but the participants were assured that they had the right to withdraw from the project at any time without having to explain or provide a reason. The participants were requested to treat the focus group discussions with confidentiality. They were informed that, due to practical issues, the collected data would not be removed from the study if they withdrew from the focus group; however, data would be merged with data from the other organisations’ results. They were given an information sheet (Appendix 10), the demographic data form (Appendix 10, Part B) and were asked to sign the consent form (Appendix 10, Part C). The focus group meetings were audio-recorded with the consent of the participants and the transcripts were preserved for the analysis process.

Some of the participating organisations did not allow the researcher to directly contact their employees to invite them to participate in the individual interviews and focus groups. In these cases, the researcher relied on the managers to provide information to staff to contact the researcher directly and to promote the study via the provided poster. After receiving information about the project, participants were requested to contact the researcher directly.
Data Collection Procedures

Document review

Documents can take many forms. They can be formal (policies, administrative documents, agendas, organisational documents and reports) or informal (diaries, notes and newspapers) (Simons, 2009). The advantages of using documents in case study methodology is to draw answers to the research question (Simons, 2009) and to support evidence from other sources (Darko-Ampem, 2003). Simons (2009) points out that documents do not provide information about what happens in the real-life context (informal reality), but rather provide information about what is expected. Document review was used in this study to understand the formal structures of infection prevention and control programs and how these plans are expected to operate.

For each organisation, documents related to infection control were reviewed to explore how infection prevention and control programs are expected to work. The document review included infection control policies and manuals, infection, surveillance systems, clinical forms related to infection control, education plans for staff relevant to infection control, occupational health plans relevant to infection control and statistical records for HAIs. The researcher used a checklist or summary form (Appendix 11) while reviewing the documents to ensure that data collected were relevant to the structure (elements), functions and management of outcomes of the infection control program. Examining the content of these specific documents provided basic information about the structure and operation of the infection prevention and control program in each organisation. The documents were examined to explore how infection prevention and control programs are managed. The researcher followed a list of questions and used a column to record any additional notes that would help with analysis (Appendix 11). The checklist and question list were developed based on best-practice infection control processes and the elements of the infection prevention and control program that were identified from the previous literature review as described in Chapter 2. The checklist and the questions were continually reviewed and updated as the study progressed. New points that assisted in analysing the documents were added to the checklist as the study progressed. For example, an infection control program assessment tool was used by one organisation to review quality, so ‘quality assessment strategy’ was added to the checklist under the quality assessment column. The documentation revealed new lines of inquiry and highlighted important areas for the
researcher to discuss in the individual interviews and focus groups such as implementation of infection surveillance, waste and sharp management and assessment of infection control programs in the community context.

**Interviews and focus groups**

Interviews and focus groups are common data collection methods in case study research. The purpose of interviews is to obtain a special kind of information, to find out what is in another person’s mind and to explore what cannot be observed such as feelings, thoughts, perceptions and intentions (Erlandson, Harris, Skipper & Allen, 1993). In this study, individual interviews and focus groups were used to obtain information with regard to the structure, function and outcome evaluation mechanisms of infection prevention and control programs in CBHVN. The two types of interviews are discussed in the next sections.

**Individual interviews**

Individual interviews enable researchers to explore, explain and describe issues from the participant’s perspective (Todd, 2006). Individual interviews are used when the researcher is looking for rich information involving a small number of participants and when it is easy to access the participants (Erlandson, Harris, Skipper, & Allen, 1993). This type of interview suited the purpose of this study because the researcher sought to obtain information about the structure of infection prevention and control programs in addition to plans and information on how the processes of infection prevention and control programs in the CBHVN context function from the perspective of organisation managers or infection control coordinators and home-visiting nurses.

There are different types of interviews. In this study, a semi-structured interview was used because it provided a framework that guided participants and focused the interview on the research topic (Fielding, 1993). Interviews in this study were guided by a list of prepared topics and questions that addressed themes and issues that were related to the research question based on the conceptual framework. Interviews with the organisation managers and infection control coordinators focused on exploring the physical structures (elements) of their infection prevention and control programs apart from exploring each organisation’s infection control management plan and operational processes. The interviewer also aimed to identify how the infection prevention and control program of each organisation is expected to function. The interviews with the home-visiting nurses included questions that assisted in identifying how the
organisation’s infection prevention and control program operates in the community context from the home-visiting nurses’ perspectives.

Semi-structured interviews were conducted in this study to obtain the participants’ insights and perceptions on the research topic. There were two interview guides: one for infection control coordinators or managers (Appendix 12) and the second guide was for home-visiting nurses (Appendix 13). The first group was interviewed to explore how infection prevention and control programs are managed. Then, the home-visiting nurses were individually interviewed to explore their perspectives on how infection prevention and control programs had been implemented and to explore what issues and difficulties they had experienced while applying infection control in the community context. All questions in both interview guides were based on best-practice infection control approaches identified from the literature review. While there was a set of questions, the order varied during each interview and there was flexibility to explore topics raised by the participants. The interview guides were reviewed and revised as the study progressed based on the ongoing analysis of the collected data from the document review and previous interviews. For example, there were some issues highlighted from the first few interviews with the managers and home-visiting nurses. Those issues were added to the interview guide to be discussed in greater depth with other participants. Examples of issues raised were cost implications, environmental control and clinical waste and sharps disposal. Issues related to infection control were discussed with other participants to explore strategies used to overcome the same type of issues.

The researcher started the interview by introducing herself to the participant and informing them that the interview would be more like a conversation and discussion rather than an interrogation. This strategy was capitalised on to establish rapport with the participants and to encourage them to have an open and honest conversation. The researcher then asked the participants some broad questions such as questions regarding their role in the organisation and what services they provide to their clients. Narrower and more specific questions followed. The interview guide was used to guide the topics of the conversation; however, the questions were not in the same order for each interview. The researcher was flexible and encouraged the participants to express their points of view freely. The researcher ensured that all the points and topics in the interview guide were covered. Storytelling-type questions were used in the interviews to allow more details and in-depth data. For example, “Tell me about the strategies that you use to evaluate your infection prevention and control”. The researcher listened to
each participant attentively and was mentally alert to ask probe questions for more details about the respondent’s original answer such as “What do you mean?” and “Can you explain it more?” After each interview, the researcher reflected and reviewed the topics and questions to incorporate relevant ideas that might answer the research question better. After the interview, the researcher thanked the participant and informed them that she might contact them again to confirm or clarify any details and ensured that a final report about the study would be sent if they requested it. The interviews were audio-recorded with the consent of the participants and the transcripts were preserved for the analysis process.

**Focus group interviews**

Focus groups have often been used in nursing research to explore issues related to education, clinical practice, and management (Merriam, 1998a). In case study research, focus groups are used in combination with individual interviews to provide richer data sets (Simons, 2009). Focus groups are used to examine relationships in the field (Fontana & Fery, 2005). They can provide insight into the perceptions, attitudes and opinions of participants (Krueger & Casey, 2000). By using focus groups, researchers are able to clarify, validate and gain participants’ views on interpretation of results from individual interviews (Henderson, 1995). Moreover, focus groups are an effective approach for generating new ideas and solutions to investigate differences or agreements between group members (Webb & Doman, 2008). Thus, focus groups are particularly useful in accessing a sense of commonality across different views and provide a range of opinions and ideas about the research topic, rather than from individual interviews (Parker & Tritter, 2006). In this study, focus groups were used to encourage participants to discuss issues raised in the individual interviews and to inform the development of an infection control framework specifically tailored for home-visiting nursing in a community context. More detailed information on the procedure followed for the focus groups is provided next.

Focus groups were organised to involve home-visiting nurses in order to confirm the findings of the study, to discuss issues related to the implementation of infection prevention and control programs arising from the documents review and individual interviews and to explore solutions. Focus groups were conducted for home-visiting nurses only; the managers were not included to ensure that the employee-employer relationship did not impair participants’ freedom of expressing their opinions or discussing issues within the focus group and to protect the participants. Participants of
the same level of employment rank were gathered together in one group to encourage them to share their perspective opinions, experiences and solutions to the addressed issues freely. The managers were invited to participate in a follow-up interview to discuss the issues of implementing infection control in CBHVN, to explore strategies to overcome them and to confirm the findings of the study. Two follow-up interviews with two managers were conducted. An interview guide was used (Appendix 14).

Three focus groups were conducted in three different organisations. The focus group discussions took place in a quiet room onsite at each organisation. The participants were provided with an information sheet (Appendix 10), the demographic data form (Appendix 10 Part B) and were asked to sign the consent form (Appendix 10, Part C). Focus groups discussions were conducted by the researcher. A focus group interview guide was used to guide the focus groups (Appendix 15). The focus group discussions were conducted in a manner that enabled the participants to openly discuss the issues, which encouraged the participants to be participative. The researcher posed neutral questions and encouraged the participants to express different opinions. Probe questions were used for more details and clarification to validate understanding.

The issues arising from the data from all the organisations were collated and presented for discussion in the focus groups. The researcher brought together all the issues that arose from the individual interviews and reviewed the focus group guide to ensure that all the issues were included. Open-ended questions were used to open up the discussions and sometimes closed questions were used to elicit different opinions. The duration of the focus group sessions was approximately 30–45 minutes. The focus group meetings were audio-recorded with the consent of the participants and the transcripts were preserved for the analysis process.

**Data management**

In conducting research, it is important to maintain and store data in a systematic way. Research logs are personal notes or diaries where important information is kept such as telephone numbers and documents review notes (Yin, 2003). Therefore, information such as details of the contact personnel of each organisation and meeting agendas with each organisation was recorded in a table developed by the researcher for the ease of tracking and following up the data collection process for each organisation (Appendix 16).
All the notes collected from the documents reviews were keyed into Microsoft Word™ documents. Copies of documents collected with the consent of each organisation were scanned and saved in the PDF format. The interviews and focus groups were audio-recorded to ensure that everything mentioned during the interviews or focus groups was preserved for the analysis process. After that, the researcher undertook verbatim transcription of the recorded individual interview and focus group recordings. Transcripts were laid out as per the format outlined in (Appendix 17). The researcher identified each interview by recording details about the interview or focus group such as the type of interview, the participants’ codes, job titles, the date, time, and place of the interview. Then, the interviews and focus groups recordings were transcribed in a table containing three columns: the first column included the names of the interviewer and the participant. The middle column included the verbatim transcription of the interview or focus group. The last column was used for the researcher’s notes and analytical memos on the participants’ discussions.

The researcher’s personal memos and notes with regard to data analysis and research processes were scanned and saved in Nvivo software for ease of access, review and analysis. All the collected data from each organisation such as interview records or logs, transcripts, field notes and records were re-identified and collated with other data and keyed into Nvivo Software and organised for ease of access, management and analysis. Nvivo software was used to identify links and relationships between data and emerging themes. These links and themes are explained in more detail in the data analysis section below.

Confidentiality with regard to data collection and storage was maintained throughout the research. Access to the data was restricted to the researcher and her supervisors and password access was applied to all the data. The participants’ names were not written on data collection sheets such as the interview transcripts. All the data collection sheets were given individual alphanumeric codes and kept in a locked cabinet. Audiotapes were destroyed after they were transcribed and checked for accuracy when the analysis had been completed. All other data will be destroyed seven years after the completion of the research project, as per the NHMRC guidelines.

**Ethical considerations**

Ethics approval was sought from the HREC at Griffith University and from the ethics committee of each participating home-visiting nursing organisation. For a study
to be ethical, it is important for the study to adhere to key ethical principles. The four ethical principles: autonomy, beneficence, non-maleficence, and justice (Burns & Grove, 2001) are particularly important when healthcare research is undertaken.

The principle of autonomy means that people should have control over their lives and be able to make their own decisions (Burns & Grove, 2001). This principle was maintained in this study by seeking approval for participation from the agencies and the staff participants. Participation in the study was voluntary. The interested participants were given an information sheet and asked to sign a consent form. Additionally, the researcher is a postgraduate student, so she and her supervisors do not work in any of the participating agencies. The researcher had no supervisory role in relation to any participants and no coercion was involved.

The principle of non-maleficence relates to addressing the potential for participants to experience harm as a result of participating in the research (Burns & Grove, 2001). Harm can be psychological, social, and physical. This study involved some minor social risks to the reputation of the participating home-care agencies and participants as a result of people knowing about any negative results. This principle was addressed by inviting more than one organisation to participate. Four home-care agencies participated in this study and the results were collated to protect the reputation of the agencies and the participants. Confidentiality was assured and all data were re-identified and aggregated in the final report provided to the participating agencies and participants before it was submitted for publication.

The principle of beneficence means: ‘Above all, do good’ (Burns & Grove, 2001). The risks of the study are balanced against the benefits of the study. This research study has provided knowledge that will inform improvements in infection prevention and control programs in community settings to ensure safe and high-quality care is provided to clients who receive CBHVN services. Furthermore, the research addressed current issues and difficulties that home-visiting nurses experience with respect to implementing infection prevention and control programs and plans. This will assist policy makers to improve policies and plans to be appropriate and effective for CBHVN.

The principle of justice means fair distribution of goods in society. This is based on the right to fair treatment so that the participants should receive whatever they are
owed (Burns & Grove, 2001). This was assured by collecting the data from a range of agencies so that no one particular organisation was burdened.

**Data analysis**

Data were collected from the chosen data sources to answer the research question. As mentioned previously, a conceptual framework adapted from Donabedian’s theory, which was presented in Figure 3, was developed for this study. This framework was used to guide data collection processes. Four home-visiting agencies participated in this study, which involved individual agencies that had developed and implemented infection prevention and control programs. Each organisation was the subject of an individual case study, but the study as a whole covered all four agencies. The cases were selected according to specific characteristics as discussed early in this chapter. After that, a data collection plan was designed. The data collection plan is presented in Table 3 and is highlighted in white. Four different case studies were conducted. The documents were reviewed and individual interviews were conducted. Data were collected according to the infection control elements in the conceptual framework identified from the literature. The elements of the infection control in the conceptual framework were continuously reviewed during analysis, and themes were generated for each element. Six main elements were finally identified from the collected data. The process of identifying infection control elements for this research is discussed in the next section. This was followed by a report of each case study individually according to the six identified elements. Finally, a cross-case analysis was conducted to write a cross-case report and to develop a framework for infection control programs in CBHVN.

The data analysis plan, highlighted in dark grey, is presented in Table 3. More detailed information about data analysis processes is presented in the next section after Table 3. Following data analysis, the researcher used the findings, together with the outcomes from the review and analysis of available literature and guidelines about infection prevention and control programs in the community context, to develop a framework for infection prevention and control programs for CBHVN as presented in Table 3 and highlighted in light grey. The framework presents essential elements for infection prevention and control programs for CBHVN and recommendations for the practice. More information about developing the framework is presented in the framework for infection prevention and control programs for CBHVN section.
Table 3 – Data gathering and analysis plan

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<th>Data gathering</th>
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<th>Data Sources</th>
<th>Data analysis</th>
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<td>Collect data about</td>
<td>Identify the structure and elements of infection</td>
<td>Document review</td>
<td>Familiarisation with</td>
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<td>the structures and</td>
<td>prevention and control programs in CBHVN</td>
<td>Individual interviews</td>
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<td>processes of infection</td>
<td>Donabedian’s theory</td>
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<td>Categorize the data into</td>
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<td>The following elements will be specifically identified:</td>
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<td>and quality improvement. Other elements will also be explored if they</td>
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<td>3) to extract in-depth themes from the collected data.</td>
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<td>The framework approach uses theme analysis that requires the</td>
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<td>researcher to become familiar with data to code it and identify</td>
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<td>themes (Pope, Ziebland &amp; Mays, 2000). It involves a number of</td>
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becomes aware of the key ideas and is deeply familiar with the nature of the data (Srivastava & Thomson, 2009). This is followed by identifying themes whereby transcripts are coded so that themes arising from the data become labels for the codes. In this study, the theme (infection control elements) was identified from the previous literature (see Table 3). The researcher explored and identified infection control elements in the literature such as infection control policies and procedures, surveillance systems, occupational safety, education of staff, consultation, and research and quality improvement. However, other elements were also explored if they are used by an organisation. The next stage in the framework approach is indexing and charting whereby data are coded into themes. A single passage of text may encompass a number of different themes, each of which has to be coded in the appropriate theme. For example, participants may have answered one question by providing information about staff education, policies and procedures for education, and sharp management at the same time. Each of these data segments was coded in the appropriate element and in more than one element if appropriate. In charting, data are re-arranged according to the appropriate part of the themes. This stage contains refined summaries of views and experiences. The final stage, mapping and interpretation, identifies relationships between emerging themes and provides explanations for the findings. This stage is influenced by the research objective and the themes that emerged from the data (Pope, Ziebland & Mays, 2000; Green & Thorogood, 2004; Bernard, 2000). Table 3 demonstrates how the data gathering plan for this study is connected with the data analysis approach to analysis.

The process of identifying infection control elements for this research

The process of developing the framework involved:

i. reviewing previously identified infection control elements in the literature

ii. reviewing extracted results from the collected data to identify current elements used by home visiting nursing agencies

iii. identifying the common infection control elements between the literature (best-practice) and what is currently applied in home-visiting nursing (current practice)

iv. identifying the issues and challenges with regard to applying infection control elements in CBHVN
v. discussing issues with the participants to identify suggestions for solutions

vi. providing recommendations for an infection control framework for CBHVN, which defines the essential elements that must be included in any infection prevention and control programs for CBHVN, informs important infection control strategies that need to be included in each element, and informs infection control management plans and evaluation mechanisms.

The elements of the infection control in the conceptual framework were continuously reviewed during the analysis and themes were generated for each element. The process of identifying infection control elements for this research was as follows: The researcher first used the identified elements in the literatures as a guide. The researcher was also open to explore other current elements used in infection control in community settings. At the first level, the researcher identified nine elements for infection control. The elements included: (i) infection control policies (ii) infection control education, (iii) staff health and safety, (iv) communication strategy, (v) surveillance systems (vi) monitoring and evaluation, (vii) environmental control, (viii) client education and (ix) availability of resources.

After extensive analysis and review of the data, the researcher refined these to six elements for infection control in the community context. Those elements were as follows: (i) governance of infection control (ii) infection control policies for client care, (iii) staff development and training in infection control (iv) staff health and safety (v) surveillance systems and (vi) the environmental context. The process of how those elements are identified is as follows.

For the first element, the researcher noted that the elements of the communication strategy and monitoring and evaluation were two elements that were related to one theme — management of infection control. Therefore, a new element was developed and named ‘governance of infection control program’ and under this element, there were sub-elements that were related to managing infection control. The sub-elements included: the structure of infection control, lines of responsibility and accountability, consultation systems, communication strategies, developing policies and the monitoring and evaluation of infection control. The second element was infection
control policies for client care. In this element, the researcher included all infection control policies that are used to protect clients from acquiring infections when care is provided at clients’ homes. This element included sub-elements such as hand hygiene, standard precautions, sharps management, waste management, spill management, client education, and transportation of blood and body fluid specimens. The third element was staff development and training in infection control. This element included strategies used to introduce infection control education to staff, infection control training and development plans for staff and topics provided to the staff about infection control. The fourth element was staff health and safety. In this element, the researcher included all the data related to maintaining the health and safety of staff during work. The sub-elements included staff personal health, immunization, the management of exposure to blood and body fluids and management of needle stick injuries. The fifth element was surveillance systems. This element included data about infection monitoring processes, the type of collected data, strategies of tracking and trending data, how data are used to assist in minimising cross-infections among clients and how early identification of infection is used to achieve better outcomes for the clients. The last element was the environmental context. This element included issues related to an application of infection control in a community context, which involved data reported by the participants relating to the challenges of implementing infection control in the community context. The issues varied from one organisation to the other. The identified issues included: environmental challenges, a lack of facilities and availability of resources, client issues related to the context, management of infection control in the home environment, HAIs surveillance and developing clinical guidance tailored for home-visiting nurses who work in CBHVN.

**Measures developed for trustworthiness and credibility**

Trustworthiness and credibility are important measures for the quality and rigour of qualitative research (Guba & Lincoln, 1994). Trustworthiness and credibility means that the results of a study are believable and trustworthy from the perspective of a participant in the research itself and others. There are a number of techniques which have been recommended by Guba and Lincoln (1994) to increase the credibility of findings. These techniques include triangulation, prolonged engagement, members checking and leaving an audit trial.
**Triangulation**

Triangulation has been used as a measure to increase trustworthiness and creditability in qualitative research (Erlandson, Harris, Skipper & Allen, 1993). This includes the use of multiple methods and sources to gather data to construct greater credibility of findings and completeness of data (Begley, 1996). As outlined previously in this chapter, data triangulation in this study was achieved through document review, individual interviews and focus groups. Employing a broad range of data sources and data collection methods ensured completeness and in-depth data to enable the emergence of themes related to infection prevention and control programs. It enabled cross-checking of a broad range of issues, thus achieving saturation of data.

**Prolonged engagement**

Guba and Lincoln (1994) stated that prolonged engagement is important and includes investing sufficient time to be familiar with the setting, building trust and preventing misinterpretation and misinformation. Data collection processes were conducted over a period of one year. This provided sufficient time to the researcher to be able to engage with the documents and participants such as the organisation managers, infection control representatives and community nursing staff. It also enabled the researcher to become familiar with the infection prevention and control programs in the participating agencies. Furthermore, it promoted engagement with the key players such as the ethics committee coordinators and organisation managers within the participating agencies. Continuing emails, telephone calls, written correspondence and face-to-face visits enabled the building of comfortable relationships.

Testing of creditability is undertaken by member checking — that is testing interpretation of data with the relevant data sources. The testing of credibility was accomplished by inviting the participants who participated in the interviews to a follow-up interview or a focus group to discuss major issues arising from the first individual interviews and the document review. This strengthened the authenticity of the findings.

**Leaving an audit trail**

An audit trail is a detailed description of the research process from the start to the conclusion of the study (Guba & Lincoln, 1994). This enables external researchers to follow the processes of the study. An audit trail was accomplished in this study by documenting in detail all the steps and decisions made from the beginning to the end of
the study. To create an audit trail, there was comprehensive documentation of the data collection process including recruitment, access to the field, selecting participants, documentation of the data analysis process and how data were analysed. All this information will enable other researchers to duplicate the study and conduct similar research protocols and processes.

**Conclusion**

The methodology chosen for this study was case study research. An extensive explanation of the methodology was provided, including the multiple data collection methods, strategies and processes for data analysis. Ethical considerations, measures developed for trustworthiness and credibility and limitations of the case study were also provided. The results of the study are provided in Chapter 4.
CHAPTER 4 – THE CASES

Introduction

As described in Chapter 3, the analysis of the collected data yielded six main elements for infection prevention and control programs for CBHVN. Those elements were as follows: (i) governance of infection control (ii) infection control policies for client care (iii) staff development and training in infection control (iv) staff health and safety (v) surveillance systems and (vi) the environmental context. These elements provided a conceptual framework (the theoretical structure) for presenting the case reports and undertaking the cross-case analysis. Each case report includes a case description. Following this is an in-depth description and analysis of the structure and processes for infection prevention and control of the case according to the six identified elements. Each element includes a discussion of the structure, processes and evaluation mechanism for that element. Finally, a cross-case analysis of the four cases is provided using the six identified elements as the theoretical framework to compare the cases and identify similarities and differences between them.

In order to understand how CBHVN organisations respond to contemporary challenges in infection prevention and control, it was important to first understand the context in which they exist and operate. Therefore, the Australian and Queensland health care systems were explored to set the scene for the four case reports that follow. A brief review of the Australian healthcare system is provided below.

The context

Australia is a federated country comprising six states and two territories. It is governed by three levels of government: the federal government, state and territory governments and local governments. The Australian healthcare system contains a complex set of arrangements that involve multiple services, funders, and participants (AIHW, 2012). The major services provided in the Australian healthcare system include public and private hospitals, medications, medical services, dental services and community and public health (AIHW, 2012). The responsibility for healthcare in Australia is divided among the different levels of government. The federal government is responsible for funding healthcare through direct payments to states and territories and it also has a role in policy making, particularly in national issues such as public health and research. The states and territories are charged with administering public
sector health care including acute services, aged-care services and wide range of community-based health services (AIHW, 2012). State and territory governments are responsible for the direct provision of the services and maintaining direct relationships with healthcare providers (Healy & Hall, 2011). This research is concerned with CBHV in Queensland, Australia. Therefore, the healthcare system in Queensland was explored with a particular focus on community care services.

The health system in Queensland is made up of many different services and programs that are provided by government and non-government organisations (Queensland Health, 2011). There are also many non-governmental, not-for-profit organisations that deliver health services in Queensland (Queensland Health, 2011). The Queensland Government provides hospitals and community health services (Queensland Health, 2011). Community health services include state-wide health programs that focus on particular health issues for example, child health, mental health, sexuality health and the home community care program (HACC). The HACC program is a Commonwealth program jointly funded by the federal, state and territory governments. The HACC program provides funds for a range of community-based services that aim to assist frail aged and disabled people in their own homes. The program mainly targets those who are aged 65 and above and Aboriginal and Torres Strait Islander people aged 50 and above (Queensland Health, 2013). Community-based care services are mainly provided in the non-governmental sector. The majority of the services are operated by not-for-profit religious and charitable organisations (Commonwealth Department of Health and Aged Care, 2000). Community-based services supported through HACC include domestic tasks, personal care, respite care, social support, case management, nursing and allied care, meal delivery and other services. Clients pay fees for services according to the type of service and their capacity to pay. Clients are also required to pay for the equipment and materials used for the services such as wound dressing materials. However, those clients who are under a disability program or war veterans [affair] program are not required to pay fees for the equipment and materials because the fees are already covered by their programs.

As described earlier, HAIs are a significant threat to the health and well-being of patients, their families and communities. Therefore, as mentioned in Chapter 2, to ensure public health, the Public Health Act (Qld) 2005 requires all those involved in providing healthcare to take measures and precautions to prevent HAIs. Hence, in Queensland, each formal healthcare facility is required to have an infection control
management plan (ICMP) that identifies the risks and documents measures to prevent or minimise risks to patients, staff and the community. As mentioned previously, community care services are provided to help clients to stay safe in their homes by providing them with support and care. These services are provided by public, charitable, and religious organisations located across Australia. In Queensland, there are many non-profit organisations that provide community care services to clients at home. These organisations are required to have an ICMP to comply with Queensland legislative requirements. This study was conducted to explore what infection prevention and control programs govern CBHV in Australia and how they operate in this setting. Four organisations participated in this study. Each will be presented as a single case in this chapter.
Case Report 1

Description of the case

Organisation (A) is a not-for-profit community health organisation that provides services to its clients who range in age from infants to the elderly. A team of experienced senior executives lead the operations of the organisation. Around 3000 staff are employed to deliver services to aged, infirmed and disadvantaged people across Queensland. A range of community services are operated by the organisation such as aged care, community health and community care. Over 1,200 residents live in aged care facilities operated by the organisation. Approximately 15,000 people receive nursing and allied health services in their own homes from the organisation. Over 750 beds are provided for crisis accommodation and refugees. There is a community care services section within this organisation that offers a wide range of services such as allied health, nursing care, incontinence care, mental health, immunisation, primary health care clinics and dementia health care. The community care services department employs various health specialists such as nurses, physiotherapists, occupational therapists, dieticians, podiatrists, psychologists, social workers, and speech pathologists. They provide services to individuals in the community at the individual’s home, according to their needs. Examples of CBHVN services provided by home-visiting nurses include health screening and assessment, complex personal care, post-acute care, symptom control, medication management, stomal therapy, wound management, palliative care, continence management, mental healthcare and chronic disease management. A brief overview of infection control structures, processes and the mechanism of outcome evaluation in one CBHVN branch of this organisation is provided next.

An overview of infection control in this organisation

For this organisation, infection prevention and control has been operationalised (structured) formally mainly via an annual mandatory self-learning package for staff. This package includes information that home-visiting nurses are required to complete before they start to work independently. One participant stated, “[The organisation] does not have a specific program as such within the [CBHVN]…in the [CBHVN],...
basically [it is] a mandatory training that we do every year” (Kathryn, Manager\(^1\)). Training was mandatory for all staff upon commencement of employment and annually thereafter. More information about the processes of infection control training and the content of the infection control self-learning package is detailed later in the education section of this case report. The next section describes the processes used to implement infection control in CBHVN in one branch of this organisation. The findings are now presented according to the six identified infection control elements.

**Element 1: Governance of infection control**

Within this case, policy encouraged all services within the organisation to apply effective infection control processes within an infection prevention and control program. In the quality management policy, it was stated that, “All services of [the organization] are to promote effective infection control, which prevents and controls infections through a systematic approach. An effective infection control program is necessary for the health and safety of clients, staff and visitors” (Policy document _1_ Quality manual: work place health & safety). The structure and processes used for managing infection control within this organisation included: (i) lines of accountabilities and responsibilities,(ii) consultation systems (iii) communication strategies (iv) and monitoring and evaluation of infection control in CBHVN. The structure and processes of responsibility and accountability for infection control is explained in the following section.

*Lines of responsibility and accountability*

Structurally, the responsibility of and accountability for infection prevention and control were divided into two levels: the organisational level and the branch level. For the organisational level, CBHVN was managed by a regional manager and branches report to her. There was the head of CBHVN services who oversees all the clinical aspects of the organisation, including infection control. The role of the head of CBHVN services in infection control was to ensure that infection control practices and policies

\(^1\) Pseudonyms are used to protect the identity of the participants.
were up-to-date and sent to the organisation’s board for approval. The structure of authority in CBHVN was reported by the manager as follows:

The home care services...is run by [a regional manager and] under [her] there is [head of CBHVN services] who oversees all of the clinical aspects of the organisation…. [she] is directly involved with governance and she is the one who is working to get the infection control practices backup on board and up to date. She will be responsible for bringing everything together. Making sure that everything is up to date and it’s appropriate, etc. Then it will go to the [head office]; if it gets passed by them it then goes to the [organisation’s board] (Kathryn, Manager).

The line of authority for infection control in this organisation was structured as follows: each CBHVN branch was operated by a manager. The branch manager contacts the head of CBHVN services for any issues or queries with regard to infection control policies. The CBHVN services, as a whole were, operated by a regional manager who delegated the infection control responsibility to the head of the CBHVN services.

The second level was the responsibility of managing infection control within the CBHVN branch. Managing infection control was integrated within the branch manager role. Analysis of infection control policies indicated that infection control activities are undertaken by the manager of each branch. The following was documented in this organisation’s infection control policy, “The branch manager is responsible to (i) develop, implement and evaluate an infection control program, (ii) coordinate and organise infection control education for staff, (iii) surveillance of infection including collecting data, analysis, trending and evaluation” (Policy document_2_infection control). To clarify this policy, the branch manager was asked about her responsibilities in infection control and she reported that she was responsible for implementing infection control policies. She was responsible for ensuring that all home-visiting nurses are aware of the policies and procedures, assisting them to easily access the policies, ensuring that the staff are educated in infection control and providing assistance to home-visiting nurses whenever it is required. The branch manager was also required to follow the policies provided by the organisation, as she said:

I am responsible for making sure that it is followed through. You know, the staff are educated in standard precautions, that they understand what that is. That they understand that they have to treat everybody the same…Also, the safe utilisation of sharps (Kathryn, Manager).

The above mentioned information showed that the responsibilities of the manager in this branch included: (i) ensuring that all the staff were informed about
infection control policies and procedures through the mandatory infection control training (ii) ensuring staff compliance with the policies and procedures and (iii) investigating and reporting high-risk incidents to the higher authorities within the organisation such as the regional manager.

During the individual interviews, the participants suggested that employing a specific knowledgeable person to take on the responsibility of infection control aspects would be useful in assisting home-visiting nurses in the community context because it is different to the hospital context. They asserted that this would improve health care services provided to the clients. One manager said:

I think as an organisation [of] this size there should be somebody either employed or on contract with that knowledge. Yes most definitely. Because I would think we are [a] big organisation now, and there should be somebody that...her primary role would be infection control within [this] organisation...I don’t know, but there should be somebody and we should be able to contact [them]... Even further down the track maybe there would be someone in the environment like [this region], somebody who can share among the organisations...I think if we had somebody within the organisation and we had a readily access [to that person] it would be good (Kathryn, Manager).

Another home-visiting nurse also recommended having a designated person with the expertise to educate and advise about infection control for CBHVN. She indicated that this would be beneficial. She said:

I think for an organisation this size we should have somebody...who is designated for work of infection control. [Person] who to contact for advice and they can do education. I mean not necessarily just for this branch, it could be somebody for the whole organisation, but even on the branch it would be useful to have somebody who is with a special interest in infection control like a resource person (Julia, Registered Nurse).

The participants suggested that employing a designated person to look after infection control matters in each CBHVN branch may be of benefit to both the staff and the organisation. They indicated that it may assist in developing and planning infection control management plans in a more organised manner apart from monitoring and evaluating infection control. The participants reported that they are provided with assistance and advice through various methods. The methods of consultation with regard to infection control are described in the following section.
Providing access to consultation was one of the main processes used to assist home-visiting nurses when they provide care to their clients. The structures of the consultation system for infection control issues depended on three methods (i) self-navigation; (ii) consultation with the clinical nurse consultant and (iii) consultation with the head of home-care services. The first method was self-navigation. This was done by reading from the references provided within the policies and procedure manuals. For any queries, the branch manager reported that she would refer to the relevant legislation and standards provided in the policies as references. She stated, “In the user guides. It then gives you, down the bottom, other places where you can actually go and get further information….they will point you in the direction of where to go to find out the information” (Kathryn, Manager). The second method used to assist home-visiting nurses on the road in their daily routine was through direct contact with the clinical nurse consultant (CNC) or the branch manager. Three CNCs were assigned to work at the branch to provide support, advice and guidance to home-visiting nurses who were on the road delivering care at clients’ homes. Those CNCs were experienced registered nurses. Some of them held diplomas in incontinence and wound management. However, none of them had any infection control experience. Home-visiting nurses were provided with a mobile phone and they could contact the CNCs if they required any assistance or if they were in a situation where they needed advice from an expert. However, if the CNCs were unable to solve a problem, the CNCs could seek the advice of the branch manager. One of the home-visiting nurses stated:

If the [home-visiting nurses] are on the road and they have got a problem about anything, whether it’s an infection or anything that [is a problem], usually their first point of call is [to] just ring the office and they speak to the [CNC] or the [branch manager]…They are always in the office or contactable by mobile. And if they are on leave, then there is always another nurse to replace [them] or take their position (Julia, Registered Nurse).

Similarly, a manager said, “If somebody got out [and] they were concerned about a wound or a situation…they would just call us here and I will…Google it and yeah [tell them] this is all what you need” (Kathryn, Manager). The participants reported that they were always able to reach the branch manager and CNCs for assistance through phone calls. One home-visiting nurse said:

We [have] got our two main CNCs, [the first one] is mainly our wound care infection [person] and the [other one] is our palliative care nurse. They are always in the office or contactable by mobile. (Mary, Registered Nurse).
The third method was used when the situation required more specific expertise. The branch manager stated that she would then contact the head of the CBHVN services for advice and assistance. She gave an example as follows:

Say, for argument sake, we have issue down here with use of the ventricular shunt and I could not get any information anywhere. I would contact the [head of CBHVN services] and I say to her “what should I do with this”. Probably the first thing she would say: “what has the referring organisation said” and I would say “they don’t know, they know nothing about it, you know, it is all brand new” She will start to look for some information and then that will come to me. (Kathryn, Manager).

To summarise, the consultation structure and processes in this branch included various strategies such as self-reading, contacting the assigned CNCs or the branch manager for advice and finally discussing the issue with higher authorities. The issue was brought to the attention of the head of the CBHVN services by the branch manager and she reported any feedback to the staff. The processes for monitoring and evaluating infection control are provided in the next section.

**Mechanisms for monitoring and evaluating infection control outcomes (quality assurance)**

The analysis of policies revealed that the mechanism of outcome evaluation infection control was monitored by three methods (i) risk and hazard management procedures; (ii) surveillance of infections; (iii) evaluation of the infection control program. The policy showed that the branch manager was responsible for conducting risk and hazard management (Policy document_2_risk management). As per the policies, the risk management process included, “determine, likelihood of hazard to happen again [the significant of the risk]; possible consequences; [and the] control measures. Then, notification, follow up and evaluation [of the risk or hazard]” (Policy document_2_risk management). Assessment of risk was undertaken by “identifying the risk such as cross contamination from infection, looking for hazards by counselling with workers and asking for any problem and undertaking client and staff survey” (Policy document_2_risk management). Notifying higher authorities was through “Electronic lodgement using the risk register category within interim reporting of a hazard or risk using [hazard or risk report form]” (Policy document_2_risk management). The policy informed that “The branch manager is responsible for implementing surveillance activities…and use the...assessment tool...to assess infection control program in yearly
basis” (policy document_2_surveillance system). To clarify these policies, the branch manager was asked how infection control outcomes are evaluated in CBHVN. According to the branch manager, these policies were not followed in CBHVN services. The assessment tool provided by the organisation was not used to evaluate infection control and infections were not officially monitored, reported or trended. The branch manager reported that the evaluation of the quality of the services in relation to infection prevention and control provided in CBHVN services mainly relied on clients’ evaluation, which they received annually. She stated:

It would all come down to client feedback. And that is a bit subjective because sometimes clients will tell you stuff and then other times things will happen and you don’t even know about it. So how do you actually know whether it is actually improved or not….they give a survey once a year (Kathryn, Manager).

According to the branch manager, the most complaints received from the clients were about the issue of gloves. She stated, “So we do ask the staff and the clients if they have any issues to contact us and we probably get really maybe three or four [incidents and complaints] a year about gloves” (Kathryn, Manager). Some clients mentioned that some home-visiting nurses do not use gloves while performing their tasks. The branch manager recalled an incident as follows “I actually had an incident last week. It was actually because the nurse did not wear gloves. It was not because she did not wash her hands” (Kathryn, Manager). The evaluation processes of infection control mainly relied on client feedback. The communication processes with regard to infection control is provided in the next section.

**Reporting and feedback mechanisms for infection control**

Participants were asked if they received any feedback from the managers regarding infection control. Their responses showed that the communication strategies with the staff with regard to infection control issues were undertaken in the regular staff meetings. The process was: if home-visiting nurses reported something or CNCs picked up incorrect practices, the issue was raised in the regular staff meeting. Infection control feedback was not a routine topic in the regular staff meeting agenda. Issues were discussed in the meeting if something was raised from clients’ feedback or staff performance, as one of the home-visiting nurses stated, “[Infection control is] not as a standing item, no. It would be raised if something had happened, but not just as ongoing standing [item]” (Julia, Registered Nurse). An example was reported by the branch manager:
Let’s say for the argument sake I [went] to see Mrs [X] and I have noted that the sterile gloves, for whatever reason, have been lying down [on the floor]. Then we will have a little chat about it. And then we will bring it up in the meeting and say now is everybody is aware what the processes [are] when you do this procedure...So we will bring them all together and say is everybody aware this is how we do this, and not to do this (Kathryn, Manager).

To summarise this element, the branch manager was responsible for infection control matters and ensured the implementation of infection control practices by the staff. The processes included a consultation system implemented to provide home-visiting nurses with assistance if required. The communication strategies with regard to infection control depended on staff meetings and they were not a regular agenda item. Infection control was discussed if there was an issue raised by the staff. Evaluation of the healthcare services provided in relation to infection control mainly depended on clients’ feedback. The second element is infection control policies for client care and this will be discussed next.

Element 2: Infection control policies and procedures for client care

The analysis of documents and interviews showed that the structure of infection control policies for CBHVN was integrated within the workplace health and safety section of the quality management manual. The recommended infection control practices listed in the policy included basic infection control areas such as staff health, standard and additional precautions, risk and hazard management, management of needle stick injuries, surveillance of infection and waste management. The policies included brief information. The staff were expected to read related legislation and standards for more information by providing names of references such as the *Work Health and Safety Act 2011*, *Aged Care Act and Principle 1977*, Australian Infection Control Standards, Infection Control in Health Care Setting (NHMRC), Australian and New Zealand food standards, Laundry Practices — Australia standards (Policy document_1_ Quality manual: work place health & safety). Most of the infection control procedures relating to CBHVN were described in the infection control self-learning package. When a home-visiting nurse was asked about the type of infection control policies and procedures provided by the organisation, she said, “There is like [general] policies. That kind of short little policies that [show] that [the organisation] is responsible for providing safe [healthcare]. Then, the procedures we have...It’s [in] an
infection control self-learning package” (Julia, Registered Nurse). The reason for having concise policies, according to the branch manager, was to avoid overwhelming the staff with too many policies and to direct the staff to the original sources rather than reproducing them. As she stated:

In our [quality management system] (QMS)…in the user guides it then gives you down the bottom other places where you can actually go and get further information and that’s what they have basically have gone towards now with all of [the] other policies and procedures, instead of reproducing something that somebody else has done, you know, issues with copyright etc., they will point you in the direction of where to go to find out the information (Kathryn, Manager).

The policies were accessible through the organisation’s internal network where all the policies were inserted and preserved. The staff were provided with personal access to the organisation’s website. This network was only accessible from a computer located inside the branch as stated by one home-visiting nurse, “This is only the [organization] intranet” (Julia, Registered Nurse). When the same participant was asked how to access the policies, she replied, “Every nurse does have an ID, but they don’t all access the computer. If they want to access something, they would usually come and ask one of the [CNCs] or the [branch manager]” (Julia, Manager). Another home-visiting nurse reported that they too have a hard copy. She said, “We have the files here in the office” (Mary, Registered Nurse).

The structure of policies and procedures for clients’ care in this organisation included hand hygiene, standard precautions, sharps management, waste management, spill management, specimen collection and transportation and client education. More detailed information about the processes used in each policy is provided next.

**Hand hygiene**

Information on hand washing was included in the online infection control education package. This included, for example, when to wash hands, for example before and after client contact; after contact with used equipment, and after blood or body fluid. The information on hand washing steps was provided as follows: remove all rings and jewellery; use soap and running water; rub hands; wash hands, rinse well, dry hands with a single used paper towel (education document_3_Hand washing). Instructions on how to maintain hand integrity was provided, such as daily check of their hands for skin integrity; covering skin breaks with waterproof dressing; and regular moisturising of their hands (education document_3_Hand washing).
Standard precautions

A policy informed staff that standard precautions were to be practised in each service and facility in the organisation as follows, “The branch [manager] will ensure that [organisation’s] facilities and services have standard precautions in place that are integral to work practice” (policy document _3_standard precautions). Another policy also stated that, “The branch manager will ensure that [organisation’s] staff implements additional precautions when transmission of infection might not be contained by standard precautions alone” (policy document _4_additional precautions). Brief information about the type of additional precautions and when to use them was also provided:

Additional Precautions are used in the care of clients known as suspected to be infected with, or colonised by, highly transmissible pathogens (such as Tuberculosis, Diarrhoea, acute-infective aetiology, Whooping Cough, Pertussis, Scabies), [or any microorganism] that are considered a significant infection risk or are highly contagious; and cannot be contained with standards precautions alone. These microorganisms cause infection by airborne, droplet and contact transmission (policy document _4_additional precautions).

The branch manager reported that she followed this policy. She said, “I am responsible for making sure that it is followed through. You know, the staff are educated in standard precautions that they understand what that is…Also, the safe utilisation of sharps” (Kathryn, Manager).

Sharps management

Policies for sharps disposal specified that, “Sharps are to be disposed through a waste company that is knowledgeable on how to deal with this type of waste” (policy document _2_sharps disposal). However, there was no mention as to whether this policy was also to be applied in home-care services, or only at aged-care facilities. To seek clarification, the branch manager was asked about the processes on how sharps are disposed in clients’ homes. She stated that the [regional] council regulation was to dispose of clinical waste and sharps in the regular garbage bin. She commented, “[disposing sharps] like IM injections…that’s still fine [to throw in normal garbage] as long as it is in a container” (Kathryn, Manager).

The manager also indicated that home-visiting nurses were not allowed to keep sharps containers in their cars. In uncommon situations when a home-visiting nurse had to use sharps on a client who did not own a sharps container, the sharps would be
disposed in the client’s regular bin after they had been put in a hard, sealed container. She explained:

If she used a needle or say [a] suture cutter something sharp like that and it was just one, she would ask the client [if] there is a plastic milk container or a jar that she will put that in there and screw it up, and then it will go to the normal rubbish...We do not carry sharps in our cars. We do not carry any waste in our cars. We don’t bring them back from [clients’] home[s] (Kathryn, Manager).

When one home-visiting nurse was asked about the process of dealing with sharps waste in the community, she responded that for clients who were known to use sharps regularly such as diabetic clients, the home-visiting nurse would provide them with a sharps container. Then it would be disposed of in the regular garbage bin when it was full. She stated, “Yeah, they go into yellow sharps [containers]. We could provide that to the patient but we can’t bring it back here. We have to double bag it, and then just put it in the [clients’] bin” (Julia, Registered Nurse). One home-visiting nurse reported that for non-regular sharps users, the used sharps were placed in a sharps container which they carried with them in their cars. She stated, “It is a one off a one for injection or whatever we always have a sharps container in our car which we use” (Mary, Registered Nurse). Similarly, another home-visiting nurse reported, “The reason why I keep [sharps container] as a precaution…I seldom have to use it…My sharp box is really just for that occasion when I can’t avoid giving injections” (Ashly, Registered Nurse). When participants were asked about the process disposing of the sharps containers that they carried with them in the car, they reported that they would bring them back to the office. However, they were unsure of the process of disposing them after bringing them back to the office. One home-visiting nurse said, “It just stays in the car until it’s at the line of being full. When it is full I just bring it back to the office and someone disposes of it. I am not too sure” (Mary, Registered Nurse). The other participant said, “I would bring it back here if it was full [and] they get rid of it straight away. They call the people to come and pick it up” (Ashly, RN). These data demonstrate the extent to which understanding of the policies and the participants’ practises of sharps disposal varied. In the policies of sharps disposal, it was stated that sharps were to be disposed of by contracting the duty with a specialised company. The branch manager stated that home-visiting nurses were not allowed to carry any sharps container with them in the car and were not allowed to bring back any sharps with them to the office. However, home-visiting nurses stated that regular sharps users buy sharps containers and keep them at their house and when they are full, they just throw them in
the normal garbage. In the case of using any sharps while delivering care, sharps were to be disposed of in the normal garbage at the client’s house after they were placed in a rigid container. Home-visiting nurses also reported that they carried sharps containers with them in the car and use them occasionally. These sharps containers stayed in the car until they were full and then they were bought back to the office. The participants were not sure about the disposal process at the office.

**Waste management**

Other waste management policies beyond sharps provided information on the types of waste and the procedures for transporting each type of waste. The policies included a description and definitions of waste categories such as general waste, clinical waste (sharps and items other than sharps), organic products, pharmaceutical waste, radioactive waste, liquid waste and chemical waste (policy document_2_waste management). According to the policies, the processes for transporting waste in clients’ homes included three options: “by waste management company, or by the client, carer or family member, or by staff arranges the transportation of waste to point of disposal” (policy document_2_waste management). The final disposal of the waste should be in line with the local council regulations. The policies also referred the reader to seek further advice from Queensland Health for other, non-categorised waste (policy document_2_waste management). The branch manager reported that they were allowed to dispose clinical waste in the regular bin after it was double-bagged. She stated:

I can’t throw dressing waste into a rubbish [in the office] whereas you can at [a client’s] home. If it’s really [dirty] you just double bag it. So, if we have a clinic over there and we are using that on a regular basis as a clinic. We will have to have a clinical waste people to come and collect it (Kathryn, Manager).

Similarly, home-visiting nurses reported that the process of clinical waste disposal at a client’s house was to be double-bagged and then disposed in the regular garbage bin in the client’s home. Their statements were as follows: “Just double bag it and then just put it in the ordinary bin” (Julia, Registered Nurse). Another one said “I usually get a shopping bag or a plastic bag for rubbish and all the rubbish goes into there, I tie off and then double bag it and then place it outside in the garbage bin” (Mary, Registered Nurse).

The process of disposal of waste from a client with cytotoxic medications was an issue for this organisation. Cytotoxic material was not allowed to be thrown in the
normal garbage. It had to be put in a specific bag and this was an issue because the home-visiting nurses in this organisation did not have access to these specific bags since they are mainly provided by the hospital. To dispose of cytotoxic material, the home-visiting nurses in this organisation had to coordinate with the client’s doctor to liaise with the hospital to provide the appropriate equipment and to collect the cytotoxic waste. The branch manager explained:

What normally what would happen is if we got [a] referral from the hospital and they would say Mr [X] he has chronic leg ulcer and…we started him on cytotoxic therapy…We will say ok, because we don’t have access to it, you will need to provide him with the appropriate purple bins and purple liners etc. [Then] they just contacted…and organise all the pick-ups (Kathryn, Manager).

This information shows that waste management policies identified that the final disposal point for waste was to be in line with the local council regulations, but to dispose of clinical waste in the normal garbage and the council take cares of it from that point. Cytotoxic waste was disposed of by liaising with the client’s hospital that provided the cytotoxic treatment to obtain appropriate equipment for the disposal of waste.

**Spill management**

Participants reported that they were provided with spill management kits and that they used the procedures provided in the manual to clean spills. Detailed processes and procedures on how to clean blood spills were provided in the self-learning package. A note to refer to standard precautions was also provided (the education document on spill management). The spill management processes was as follows, “When cleaning spills, isolate the area; wear gloves and eye protection if applicable, a mask and plastic apron; apply absorbent paper to soak up substance and discard” (the education document on spill management). Processes for using granules to contain the spill were also provided. Procedures to follow when a spill kit was not available were also detailed in the self-learning package.

**Specimen collection and transportation**

Specimen collection and transportation was not a standard practice for the home-visiting nurses in this organisation. Home-visiting nurses usually referred clients to their general practitioner (GP) or a pathology company for any sample collection. The sample collection required a special request that could only be provided by a GP. One home-visiting nurse explained, “If we have suspected that they have got a UTI…we
would probably advise them to go and see the doctor...[We do not collect the specimen]” (Julia, Registered Nurse). Another participant also informed that home-visiting nurses do not collect the specimen form the clients directly. They called up their laboratories to get the sample. She said, “We don’t [transport specimen]. For example, a client...has got symptoms of the UTI, and she can’t get to a GP. So, I would guide them to…pathology services. Then, [the pathology services] will come to the house and collect the sample” (Ashly, Registered Nurse). Participants confirmed that they had been required to collect a specimen from a client and that the home-visiting nurse usually only advised the client to seek a GP’s consultation or arranged the pathology services with the assistance of a GP for clients to have their sample taken and transported for analysis.

**Client education**

Home-visiting nurses emphasised that client education increases clients’ compliance and that this would assist in implementing infection control practices at their homes and assist in achieving better health care results. For example, one participant stated, “Teaching the clients the right way to heal the wound will be successful [because] the client will do it again and again if they are thinking that they are getting all the credit for themselves” (Ashly, Registered Nurse). Another participant stated:

I have found that community nursing to be very effective in infection control as long as the clients are compliant, if you got the client compliant on board it makes everything a lot easier... Absolutely, client awareness is definitely a big issue. I would say definitely (Mary, Registered Nurse).

One participant informed that she educated her clients on the basic aspects of infection control and the risks involved. She mentioned:

Just understanding the risk involved; just being aware of what is required for the services that [are] being provided and how they store their dressing and things like that. They should not be just left open for the cat jump on and things like that. Just that sort of information. So just to maintain that while we are not there. That everything is still kept clean and things like that (Mary, Registered Nurse).

Another participant commented that client education topics varied from client to client according to their needs. She said:

So we would be teaching them how to [take] care of the catheter and how to keep it clean, washing their hands, and not touching the ends so all that sort of things. If it is wound care, you know because some people have ideas that they
just want to put their dressing there and stick it out on the sun to dry (Julia, Registered Nurse).

Participants reported that client education had an important role in implementing infection control practices in clients’ homes by home-visiting nurses. It supported clients to achieve better healthcare outcomes.

To summarise this element, the structure of infection control policies for client care included basic infection control practices, which depended mainly on implementing hand hygiene and standard precautions during client care. Sharps were usually disposed of in a sharps container and then disposed of in the client’s normal garbage. Clinical waste was also generally disposed of in the client’s normal garbage after double-bagging. Specimen collection was not a standard practice for home-visiting nurses in this organisation. Participants emphasised that the role of client education was important for improving the implementation of infection control in a client’s home. The next element discussed is staff development and education with regard infection control.

**Element 3: Staff development and training in infection control**

Infection control by CBHVN in this organisation depended mainly on staff development and education. Infection control training was compulsory. The structure of the infection control training included: an orientation program with a self-learning package and support days. The self-learning package was completed by staff in the orientation program when they were first employed, and then undertaken annually. The clinical practices of home-visiting nurses were assessed by what were called ‘support days’, which were assigned to each staff member every six months. The organisation also used other external resources for staff development. A detailed explanation about the structure and processes of infection control for staff development and education is provided next.

Within the orientation program, a newly employed home-visiting nurse was required to accompany a senior nurse for two weeks to demonstrate the work routine processes and methods. The new home-visiting nurse also had to pass and complete several compulsory educational courses and exams. The self-learning package was one of them. Each home-visiting nurse was duty-bound to read this learning package meticulously and complete the test at the end of the package in the induction period and then annually. After passing the exam, the home-visiting nurse was required to send a
copy of the completion certificate to the Human Resources Department. In the case of an unsatisfactory result in the test, the home-visiting nurse was required to re-sit for the test until all the answers were correct. Staff were allowed to seek their coordinator’s assistance prior to their second attempt. The branch manager explained that the processes of the induction program and compulsory infection control education were as follows:

When staff first arrive for the nursing [orientation] they have a minimum of two weeks where they are orientated …. and during that time they do all the mandatory tests, which is [the self-learning package] and calculations and all that and then they will go out with a staff member, [an] experienced registered nurse, for those two weeks…they would know what the processes would be and who to come and talk to if they [have] got an issue (Kathryn, Manager).

The self-learning package contained basic information on infection control practices which the home-visiting nurses had to follow while delivering care to clients. Infection control practices included: hand washing, wearing gloves, food preparation, cleaning of blood and other body fluids, handling infectious waste (clothing and linen for community clients), handling sharps and managing needle stick injuries and accidental exposure to blood and body fluids (the education document on content). The self-learning package also included information about some blood-borne infectious diseases such as Hep B and C and HIV. When a home-visiting nurse was asked about the content of the self-learning package, she said:

That is very comprehensive… if you follow those guidelines you cannot go far wrong. [It contains] hand hygiene, the use of the hand sanitiser, and then it guides you how to handle needle stick injuries and how to dispose of waste product and what you do if you have a spill of body products, how to clean it up. All of those come under that umbrella (Ashly, Registered Nurse).

One home-visiting nurse reported that the guidance of clinical practices related to infection control such as wound dressing techniques or urinary catheter and intravenous management were not included in the learning package because:

[We are] really following the manufacturers’ instructions and they vary from minute to minute, because they change these as per the department of the manufacture company development… All of these [products] come with a box and instructions and that is what you need to be following when you [are] inserting it, because it comes with instructions so you don’t need us to replicate that into a procedure. You just need to go to the source, which is the instructions that [come] with this (Ashly, Registered Nurse).

One of the home-visiting nurses shared her experience of the orientation program as follows:
At orientation, we need to do a full overview of the policies and procedures in the manual. We have to do certain criteria and assessment…We have to do [the self-learning package], which gives you all the standards and policies and procedures. And then it got a quiz in the end and you have got to answer the questions. And you have to pass, and if you don’t then they follow up and you know you have got to pass it (Mary, Registered Nurse).

To summarise, the structure and processes of the orientation program for infection control consisted of the self-learning package and two weeks of clinical orientation. The infection control learning package provided home-visiting nurses with basic information on infection control procedures, which were required when they provided care to their clients. The two weeks of clinical orientation gave home-visiting nurses the avenue to learn from their expert colleagues so that they would be competent at dealing with different situations while they were working alone in the community context. The clinical orientation was followed by a support day to evaluate the staffs’ competency in performing different clinical procedures.

“Support days” were a process where each home-visiting nurse was scheduled to be accompanied by a CNC to assess their clinical practices. Home-visiting nurses delivered health care services to clients independently only after they were certified as competent by the CNCs. In the scheduled support days, if the CNC noted that a home-visiting nurse was not yet competent in a specific practice for example, urinary catheterisation, the CNC would accompany the home-visiting nurse again and demonstrate the correct procedure and observe the home-visiting nurse while she/she performs the same procedure again until the home-visiting nurse was deemed to be competent. This evaluation was inserted in each home-visiting nurse’s file in the Human Resources Department of the organisation. The support days were also a chance for the home-visiting nurses to learn from their CNCs about any other clinical practices they may not have been experienced in. For example, if the home-visiting nurse wanted to learn a specific procedure, they could request the CNC to teach them how to perform the procedure. The CNC would then arrange for the home-visiting nurse to visit a client on their support days to teach the nurse how that procedure is performed. The support days were undertaken twice a year for each home-visiting nurse. When one home-visiting nurse was asked about the processes of support days, she said:

That [home-visiting nurse] would come out on the car with me that day and she will just follow me around. They are doing it in such a way that you don’t really feel [like you are] being watched. They just do it in a supportive day, which is very unique to [this organisation]. You never feel as [if] you are being judged
when you probably are, and you never feel that you have to meet certain standards, although you really do. And if you don’t meet a certain standards….She would not say that was no good, she would just tease out what the issue were and get you to say how could you have done it differently….Those clinical support days are invaluable because not only do you know, you have kind of got somebody’s eyes, I was feeling they are like a little bit a guardian angel. You know they are watching you, but just giving you the confidence also to know that I am doing a great job here. Because some times when you are on your own in the community…I often feel I am the one that’s all on my own. And you really got to get it right, but when you have a clinical nurse who have much more experience than you, who comes out and spends the day with you and you do nothing different because it is impossible really to fake it. You are just doing what you normally do and the [CNCs] whose got 10 years’ experience above you and [has] seen a lot more than you have tells you that you are doing great and she would not change anything, that is areal pat on the back (Ashly, Registered Nurse).

One of the home-visiting nurses informed that her hand hygiene practices were assessed on the support days. She stated, “I think we may have been observed to do hand washing in the support days” (Ashly, Registered Nurse). The branch manager mentioned that hand hygiene practices were assessed during the support days. She said:

[We] do [assess] hand washing [in support days] because it is no good [to do it in the branch]….in the home, we have ordinary taps. So, we will [assess hand washing technique] in the home as well…Just to make sure that they do the appropriate [technique] (Kathryn, Manager).

When the participants were asked about the evaluation process and feedback after their support days, they stated that the final report was sent to the Human Resources Department to be kept in the file of each nurse. Home-visiting nurses were also provided with verbal and written feedback on their hand hygiene practices and clinical practices after their support days. Home visiting nurses were also requested to send their feedback on the performance of the CNCs who accompanied them on the support days. One participant stated, “Yes, [CNCs provide feedback to home-visiting nurses] and it is kind of written down, [they] write a bit and the [home-visiting nurses] write back their feedback as well [on CNCs performance]” (Julia, Registered Nurse). Another home-visiting nurse stated, “We always get our feedback from that. We get written feedback as well as verbal feedback and follow up [performance] if required” (Mary, Registered Nurse). The assessment reports were sent to the Human Resources Department and kept in the staff files, as one of the home-visiting nurses stated:
It stays in their personal files, but it also goes to Human Resources. And if there is any areas where people are not performing and they have not achieved the level [of competence]. Then they will have to do with training and then it have to be followed up (Julia, Registered Nurse).

The above mentioned information indicates that the self-learning package and the support days were to be completed by each employee at the beginning of their employment and the staff continue to repeat the cycle annually as part of staff development training and education. Support days were used at the beginning of the employment to ensure staff competencies to perform clinical tasks and to ensure their ability to provide care to clients based on the organisation’s standards. Support days were repeated for each staff member every six months to ensure their competencies, to pick up gaps in their clinical practices and to assist them with the education they required. Staff competencies on hand hygiene practices were assessed during the support days. A final report was sent to the Human Resources Department to be kept in the file of each home-visiting nurse. The organisation also used external resources for education, which are explained next.

External resources for education included: attending conferences and inviting external speakers to conduct training sessions for the staff. The organisation provided funds to home-visiting nurses who wish to attend a conference or training course that would benefit the CBHVN profession and practices in the community setting. The branch manager could arrange for all home-visiting nurses in that branch to attend certain training courses if it was believed to be indispensable and of benefit to everyone. One participant stated:

We can really go to any education that we want to, you know. If we want to go to a conference, we just apply and [The branch manager] virtually approves all the applications that we want to do. [The organisation] will always pay for the conference or the training and travel and accommodation. I have just been in a conference for three days up in the Northern Territory and that was all paid for…and if it is a training that we think that everybody is going to get benefit from. So if it is running for a long time so we will try and send everybody to it. We might send maybe two or three at a time or three or four at a time if it is something we think that everybody will get benefit from (Julia, Registered Nurse).

When the staff attain external education, they come back and provide an overview on the training course that they have attended to the other members of the branch. The branch manager said:
When the staff goes on training for whatever it is they are going to do, they are expected to come back and give an education session to the staff. So depending on what it is they will come back and do a 15 minutes to half an hour presentation to the staff (Kathryn, Manager).

According to the branch manager, the last infection control conference in a community setting that she attended took place a very long time ago and the topics were related to aged-care facilities more than home-care services. She said:

There was one that came up and I attended it some years ago, but it was basically aged care. I should not say there was nothing in the home care; they went through all the precautions, usual stuff etc., but then it was all focused on the diarrhoea and vomiting and the food safety (Kathryn, Manager).

The CBHVN services mainly received information about conferences and training courses from product sales representatives. However, none of the training or courses that the staff attended thus far included infection control because participants never received any information about infection control conferences or probably they have not taken any interest in infection control. When one participant was asked how the staff received information about conferences, she stated, “Sometimes companies will send us emails like if [a company] for instance are having [conference] about wound education, they will send information through. We got a lot coming from [a company] so that’s all different things that they do” (Julia, Registered Nurse).

The staff could attend training if they requested to be educated on topics that are of interest to them. The branch manager can coordinate with external experts whenever possible. For example, when the nurses were required to learn about a specific clinical practice such as caring and dealing with a chest tube drain that has been newly introduced to the market. In such a case, the branch manager would contact an external expert such as a company representative and ask them to provide a teaching session on how to deal with the equipment to the home-visiting nurses. One home-visiting nurse stated:

My manager has dressing representatives come in and technicians coming from the hospitals for what they used to call the vacutainers…She arranges periodically training like that... So, whenever there is new techniques and new equipment coming out to that the surgeons are using in the local hospitals, she usually books one of the representatives or books one of the clinical nurses form the hospital to come out and tell us how to do it properly…if it’s a more complicated dressing or its new to the market or its changed recently, then she will get the representative to come and say this is the changes and this is how
you do it now…There is so much information out there for you and there are so many people to learn from them…It is just a way of communicating with people if you are a little bit of doubt (Ashly, Registered Nurse).

To summarise, this organisation strongly supported education for their staff. They covered education from many different approaches. There were compulsory courses, support days with clinical nurses, in-service lectures, and external education. The only thing required from their staff was to ask for the necessary information. The next element discussed is staff health and safety.

**Element 4: Staff health and safety**

Occupational health was one of this organisation’s priorities. The structure of occupational health was divided in two policies: personnel health and the management of needle stick injuries. These policies were a part of workplace health and safety policies in the quality manual. The processes of both policies are discussed next.

**Personnel health**

The staff health policy included a recommendation for staff to maintain their own health and immunity status. A provided list of recommended vaccines was as follows:

All persons who have physical contact with, or are involved service delivery to the general public, should have current immunisation against Hepatitis B, Polio, Tetanus, Whooping Cough, Diphtheria and Tuberculosis. If immunity is not current the immunisation should occur within one month of employment or reasons for not doing so be presented by the staff person to the Workplace Health and Safety Officer (Policy document_6_staff health).

The analysis of policies showed that this organisation not require their staff to confirm their health status when they were initially recruited, nor after that. However, the policy stated that “All persons who have physical contact with, or are involved in service delivery to general public, should have immunity against certain infectious diseases” (Policy document_6_Personnel health). The policies showed that staff were requested to be responsible for maintaining their health and immunity status and to ensure that they do not to transmit any infections or disease, and at the same time, prevent any hazardous accident related to their duty within the community environment. In addition, the branch manager stated that the organisation offered influenza vaccinations to their staff annually. However, the organisation did not enforce
vaccination uptake; they could only suggest that the staff have vaccination. She commented:

Every year we have a flu vaccination program...[The organisation] provides free of charge flu vaccination for all of the staff who want it and the uptake is not [as] good as it could be...We can’t insist that they are vaccinated. We only suggest (Kathryn, Manager).

This was confirmed by the branch manager, who said, “No [staff are not required to provide proof of vaccination] (Kathryn, Manager).

When the branch manager was asked about the processes of employment and the health requirements such as a medical examination when the staff are initially employed, she said that the organisation did not require their staff to provide any medical examination report. However, they were required to sign a statement that says that they are capable of performing their duties. They were asked to declare any health issue that could impair the performance of their duties. The branch manager stated, “No, When they have been offered the position [they sign a paper which stated] that they are in good health and able to perform their duty (Kathryn, M). It was mentioned in the organisation’s policy that:

[the organisation] reserve the right to request the staff to undergo a medical examination when there is a reason to suspect that the health of the person is impairing their ability to work effectively, or in the case of extended or repeated sickness (Policy document_6_Personnel health).

In a nutshell, staff health is one of the safety priorities for this organisation. The policy stated that all staff were required to be immunised against infectious diseases and were required to keep their health up to a certain level. The organisation did not require any of their employees to provide any evidence of their health status.

*The management of needlestick injuries, exposure to blood and body fluid and exposure to infectious disease*

In the policy, it was stated that “It is mandatory for all staff to be educated on safe work practices and adhere to standard precautions in the prevention of contamination through needlestick injury” (Policy document_5_needlestick management). The policy of needlestick injuries was provided, “to ensure [application of] appropriate strategies to minimise accidents involving blood/body fluid” (policy
Risks and hazards such as needlestick injuries and exposure to blood and body fluids were managed by firstly educating home-visiting nurses on how to deal with such an incident. The policy stated that “It is mandatory for all [organisations] staff to be educated on safe work practices and to adhere to Standard Precautions in the prevention of contamination through needlestick injury” (Policy document 5_ Management of needlestick injury). Secondly, all incidents must be reported to the manager. It was stated in the policy that “All needlestick injuries should be reported to facilitate risk management and quality improvement” (policy document 2_ Incident procedures).

Instructions on what to do when the staff are exposed to needlestick injuries was also provided in the policies. Information on handling needles, syringes and other sharps was provided in the self-learning package. Procedures for managing needlestick injuries and accidental exposure to blood and body fluids were also described. When one participant was asked about needlestick injury processes and policies, she said “Yeah, we have got policies and procedures in place with that; reporting and the follow-up test[s] and that sorts of things; flushing the hands and all that sorts of things” (Mary, Registered Nurse).

Needlestick injuries and exposure to blood and body fluids were among the issues that this organisation focused on. The manager was responsible for assessing the incident. When the branch manager was asked about the processes of reporting and the management of needlestick injury and blood and body fluid exposure, she replied:

The registered nurses will report to me or to the clinical nurse in the office… and that is actually in the infection control learning package as well that they have it very clearly what to do…Once it is reported to us we fill in that paperwork. Then you determine whether or not it’s a serious exposure or whatever…If it was a significant one, what happens is we also have a risk management system. So if say it was a significant blood exposure or needlestick injur. That would come up as a high risk. So, when that is all entered that will go straight to the state manager…and then…I will just note it and it will be reviewed by the general practitioner… [and] the GP will see [the staff] again in a weeks’ time (Kathryn, Manager).

One participant shared her experiences of a needlestick injury. She recalled:

I have had needlestick [injury]. It was a diabetic patient. Doing a blood sugar level. He has his device you know from doing the finger prick and it didn’t have the guard on the top. And I was standing reading his note and he volunteered [to prick his figure] and [he] just stick [the device] on me [by mistake] and it did not have a cover on it. That actual patient is mute so I could not even establish if it was a used needle or, you know, because he cannot talk. So yeah he just stuck it on me. He was trying to help, but he just, yeah. I had to do an incident report. I
went to see my GP. I had a blood test the next day. Then I had another blood test the next three months later. I reported it to Human Resources, because I had to pay for the blood tests. [Human Resource then] asked me to get a medical certificate from my GP to see if I had required treatment (Julia, Registered Nurse).

To summarise, this organisation supports staff health and encourages their staff to maintain their health status. The needlestick injury processes were provided and the staff were informed about what to do and to whom to report if they encountered such an incident. The processes of monitoring infections in this organisation are provided next.

**Element 5: Surveillance systems**

The analysis of the policies showed that the processes of collecting infection data involved a monthly resident infections summary form. The policies also stated that:

The branch manager is responsible to implement surveillance activities, report feedback to staff and use the information for risk reduction and quality improvement [and] assessment tool is used to assess infection control program on a yearly basis [using the infection control self-assessment tool, which is provided by the organisation (policy document_2_surveillance system). Definitions of different infection types such as skin and soft tissue infection, respiratory tract infections, common cold syndrome/pharyngitis, influenza-like syndrome, bronchitis and trachea-bronchitis, pneumonia, ear infection, sinusitis, mouth and pre-oral infections, urinary tract infections with catheter and without catheter, blood stream infections and gastroenteritis were provided in the policies (policy document 2_surveillance). However, according to the branch manager, although the surveillance of infection is mentioned in the policies, it was implemented only in the aged-care facilities. When she was asked if surveillance was conducted in CBHVN services, she replied, “We don’t have one” (Kathryn, Manager). Likewise another HVN participant stated, “We do not have surveillance reports” (Ashly, Registered Nurse)

Participants reported that the process of detecting infections took place upon admission to the CBHVN services of the organisation by assessing clients for any current infections that they have and it is written in the client’s admission form. This form was completed in the initial assessment and through the review process in each client care episode. However, home-visiting nurses were not obliged to collect or report back those results to the branch manager. According to the branch manager “[infection] would be all written in the progress note…[home-visiting nurses] usually get the information form the general practitioner…so we can include that into the clients notes
as well” (Kathryn, Manager). One home-visiting nurse said she would not document it in the clients file. Specifically, she said, “There is no way for you to record it because everything is kept in the home” (Ashly, Registered Nurse). One home-visiting nurse reported the processes for dealing with a client with infection as follows, “If it is a wound infection, as a primary [home-visiting] nurse you would document [it] and liaise with the GP if they need it or organise a referral for pathology” (Mary, Registered Nurse).

Infectious diseases were reported to government departments. One participant said, “There are some notifiable diseases that have to go through [the] department of public health” (Ashly, Registered Nurse). Similarly, another participant said that there was a form for reporting infectious diseases. She said:

I think there probably would be a government department that we would have to contact and they probably have an online form to inform about a notifiable disease. I think it’s that sort of thing because I have never had that situation before. So it is a sort of thing that you would have to just inform your manager and then see what is the procedure was (Julia, Registered Nurse).

To summarise, infections in this organisation were monitored in CBHVN, but not trended or tracked. Infections were documented in the clients’ progress notes and followed-up by the assigned home-visiting nurse and the treating GP for a treatment plan. Infections were not reported back to the branch manager, except for notifiable infections. The next element discussed is the environmental context of CBHVN.

Element 6: The environmental context

Participants reported that there were some environmental issues that adversely affected the implementation of infection control practices in the community context. In this organisation, these issues included: resources availability (hand hygiene facilities and equipment and wound dressing materials); the client home environment; storage space for materials; and clinical guidelines for home-visiting nurses. Each issue is discussed in more detail in the next section and processes used by home-visiting nurses to overcome these issues are also discussed.

Resources (the unavailability of equipment)

The unavailability of some infection control equipment was one of the issues raised by participants in the organisation such as the unavailability of hand-washing facilities and wound management materials. Basic infection control equipment was
provided to the staff and clients by the organisation. This equipment involved gloves, gowns, masks, masks with shields, and alcohol-based hand-rub gel. However, home-visiting nurses faced challenges when it came to hand washing. For example, appropriate antibacterial soap, paper towels or clean towels were not always provided by all clients. Moreover, the washing facilities like a bathroom or sink were not always clean or appropriate for use. One participant stated:

When [we] are going to the home [we] are probably relying on a clean hand-towel and sink that does not has filth around it, that has an antibacterial liquid soap and … you can’t use the throw-away towels. Having things to wash your hands suitably with is probably the biggest issue (Ashly, Registered Nurse).

Another participant noted that she would ask her clients to give her a paper towel or clean towel, but she could not guarantee how clean it was. She stated, “Some will give you a clean towel, but really sometimes you might not really want to touch them” (Julia, RN). She added that the availability of alcohol-based gel may solve the issue when hands required disinfection. She said:

When we go to patient houses, we [have] got the gel for the hand [washing]. We can wash our hands in the patients’ houses as well sometimes. Some houses are better than others…But now we have got the gels, so that is good ….Well, I use that quite a lot now. I still like to wash my hand[s] if it is a clean bathroom and I go in. But then, I find that I am using the gel a lot, while with the patient at different points. (Julia, Registered Nurse).

Participants reported that the unavailability of appropriate hand-washing facilities such as antibacterial soap, water, a clean sink, and clean towels was still an issue in home-care services. The availability of alcohol-based hand rub could solve this issue to some extent, but CBHVN s still had issues when they needed to decontaminate their hands in some clients’ homes.

The second issue was the unavailability of wound management materials. The unavailability of the resources stems from the financial status of clients. Most of the CBHVN clients required wound-dressing services. These clients required materials for their dressings such as medicated dressing packs, single-use dressing trays, gauze, plasters and any other materials that were essential to dress their wounds. The cost of most of the materials used in wound dressing is very high. The organisation was not able to provide these materials to clients free of charge, because it was a non-profit organisation. The amount they charged clients was not enough to compensate the
organization for the amount they spent on their materials. The strategy of this
organisation, therefore, was to deal with a private company as follows: they set an
account for the client and then order all the required materials under the client’s name
and then the company deliver the materials straight to the client’s house and the client
pays for them. One participant explained the process as follows:

We used to provide all of the supplies and then we had to get reimbursement
back from the client. And we financially found that we are not getting probably
50% of it back, and because the government does not fund for it we would just
lose a significant [amount of] money. So now [we] go with a [company]…and
the fee is very reasonable. And what they [the client] are going to need and they
will set an account and they [the client] will pay for it (Kathryn, Manager).
Dressing materials were the only thing that they had to ask the clients to pay for and it
was usually negotiated with the client according to their affordability. One participant
mentioned:

That one thing we have to try and, you know, to get the patient to pay. We can
waive the cost of the visits, but because the dressings are coming from a
company [we can’t]. So normally if it is a patient with financial difficulties we
usually have to negotiate with them and maybe use a cheaper dressing that they
can afford. You know, they might not be able to afford the dressing that we
would use as maybe our first choice. But, it’s a kind of discussion with the
patient. So simply that [the cheaper dressing material] suits them and what they
can afford (Julia, Registered Nurse).

There were some situations when the clients were so poor that they could not
afford to pay for a dressing pack for each single dressing. The home-visiting nurse then
had to use the same dressing pack again and again, which could jeopardise the sterility
of the equipment and put the clients at the risk of infection. One participant stated:

We do, in the community, use the sterile packs, because we have got patients
paying for all of these. And some patients use the same sterile pack and ask you
to, time and time again. If they can. I mean there is enough that goes in there, if
it is a tiny wound to be used three times. So it is not sterile after you have
open[ed] it for the first time. You really have to judge whether you think it is
appropriate. And then gently say that we really need to be using [a] single one
each time [we do the dressing]. But then that is a cost implication, that [is] a
dollar a time. And if somebody [is] having a dressing three times a week, she is
using the dressing and three dollars with it. Some people don’t have that kind of
money. So you have to go with that compromise as well. That is another thing
that I think does not help cross infection, because in this country the patients
have to pay for their dressing [materials] themselves (Ashly, Registered Nurse).
Another participant commented that the financial status of the patient may affect their health outcomes and put them at the risk of infections and less-desired outcomes due to the inequality of the healthcare system. She stated:

> It all comes down to money really. I think to be perfectly honest how the Australian healthcare system is funded is very fragmented and it does frustrate me at times as a community nurse who repeatedly goes into people’s homes and find that those in desperate need of education and desperate need of supplies do without. But if you [have] got money in this country you can afford the best of every healthcare system there is. And you can get your wound healed a lot quicker, reducing the risks of cross infection a lot quicker, if you have got money. The financial situation[s], which then dictated that if you can afford private healthcare…[then] you [have] got a service that is completely different and the consequences and outcome is completely different. As a result your health is completely different. You go to [a governmental] hospital and it is a different story…you go to a poor client with no money and their outcome is not as great as a rich client with private healthcare. You are scrambling around to get that client the basic [requirements] and they don’t have access to as much as when you do have money. I think that [the] disparity in a health service is just [a] conflict the whole time. Those in desperate need don’t have access to services. Those who don’t, who are intelligent and educated and have the money have access to whatever they want. The balance is completely inequitable…no wonder you have more cross-infection with clients who are ill-educated and have no money (Ashly, Registered Nurse).

Similarly, one participant argued that the ability of the home-visiting nurse to give good-quality services to low economic status clients may not be possible sometimes in a community context, especially to those with few options and resources provided. Sometimes, sterile dressings could not be used in the community context due to financial issues. She said:

> Sometimes clients won’t even pay for dressing packs. So, you know, that is another issue. Then in that case I would look into a clean towel. Hopefully, there will be something clean around somewhere in the home that you can put stuff out on. So it’s just giving people options about what it is that they can do in a fairly simple easy way, because not everyone can afford pay for dressing packs, sterile this, sterile that… because clients don’t have a lot of money so… It’s just to make some people understand that [it is important to] make things [as] surgically cleans as possible, But obviously it’s not going to be sterile in that home environment unless it has to be (Kathryn, Manager)

Despite the lack of equipment caused by the financial challenges of their clients, home-visiting nurses aimed to provide good quality services to their clients. They tried to find ways to help those less fortunate as much as they could. When home-visiting nurses
were asked about strategies they used to try and offer materials to less fortunate clients, one participant said:

I went through some stuff the other day and there are some dressings that are due to expire in the next couple of months. So I take them out…and if we have got somebody who really cannot afford this, so then we got this few bits and pieces that we can use…we can look at other alternatives. It might take the wound longer to heal (Kathryn, Manager).

Likewise, another participant said:

What I do is that I have got patients who donate stuff. For example, a patient of mine she ordered stuff and she is a millionaire and we got her wound healed and I said to her, if there is any equipment that you don’t now need, I can always find a good home for it. That comes across repeatedly…I keep in my kit and I use it at my own discretion. I discriminate between those who are really desperate to those who probably could [afford it] if you use cheaper dressing. You know you probably think that a leaf of [silver] worth five dollars would probably heal the wound quicker, but sometimes they are not able to afford that. You have to use a [something cheaper] and it does not have any silver…I can tell you pretty much as soon as I walk into the house who can afford $15 and who can’t (Ashly, Registered Nurse).

The unavailability of wound-dressing resources was an issue in this organisation as it depended on the clients’ financial status and their ability to provide the required equipment. Health outcomes were relatively better for those who could afford high-quality materials.

**Clients’ home environments**

Participants reported that the community context is uncontrollable, unpredictable and had fewer resources in the field. In CBHVN services, the home-visiting nurse is a guest in the client’s home. So the home-visiting nurse needs to respect that and try to work with whatever resources that are provided by the clients. They cannot order the clients. They can only request and try their best to discharge their duty with whatever that is available in the clients’ environment. Working in the client’s home was one of the issues highlighted to be a challenge for home-visiting nurses. One participant said:

In the community the fact that you are in the patient’s home so you are limited partly by what they are able to supply and their kind of environment out there [that they are] living in (Julia, Registered Nurse).

Another participant commented, “Environment is definitely one of the [challenges]…probably say some of the difficulties would be the fact that you are in the clients’ home”
(Kathryn, Manager). Another participant also stated that being in the client’s home is the biggest barrier when working in the community. She said:

“I think the biggest barrier we have is going to the client’s home and not being in control with the situation… You try to create [a good work area] and encourage the client to do that…but that is not always the case. So you [have] got to work around what you have got. Like you will go into a house and it’s the kitchen table that you have to utilise as your workspace or something like that. I think this is would be the biggest barrier, but the majority of my clients, [I] am lucky [laugh] they are really good, but yeah, that is not always the case and you have just got to make your workspace safe and clean and disinfected. I guess just the fact that you have got to work with what you have got, really. Like you can go to a home that is fantastic and great and it works very well, but then you can go into a really crowded home which has barely limited space and it’s quite unclean. But you have got to still make your area where you working clean and hygienic to be able to perform [the] task so that is kind of the balance and juggling of community nursing (Mary, Registered Nurse).

Participants tried their best to provide their clients with good-quality services, but they reported that the uncontrollable client’s environment could make it difficult for them. Participants tried to maintain a clean environment as much as they could and according to the availability of equipment and what their clients could afford. One participant said:

I am supposed to go and do a dressing. And if you go to a house and there is so much clutter everywhere. You have to see if you can and try to have a little table or something that you can just have clean you can setup your [sterile field]. I mean some, they don’t even think about it and then when you suggest it they are just happy to do that (Julia, Registered Nurse).

Another participant argued that there are a lot of challenges in working in a client’s house and home-visiting nurses always try to find a way to overcome these challenges. She said:

Sometimes you bend your knees on the floor and you get a small little sterile space or you put it on the patient’s bed and you are trying to balance the sterile field with all the stuff on it and that the patient moves and things fall off. Often, you have a patient who needs to have a buttock dressed and you are rolling her on her side and then you are the only nurse there. So, yes, there are heaps of problems, but you really got to kind of anticipate what those problems are and try and navigate your way around them…So, you have got…to anticipate what the problems and risks are to minimise the risk of cross infection. (Ashly, Registered Nurse)

Storing wound dressing materials was another issue raised by the participants. As the materials were delivered directly to the client’s home, some people stored them in clean boxes away from the dust and dirt, while others had them lying uncovered. One
participant commented, “Storage equipment in patients’ homes [is one of the challenges]; some patients will buy like a nice plastic box with lid while others just stuff things in plastic bags with dogs running around” (Julia, Registered Nurse).

To summarise, the client’s home environment raised several issues such as the low level of hygiene of clients, clutter, the method of storing materials, and the unavailability of equipment. Participants reported several strategies that they applied to overcome these challenges.

**Clinical guidelines designed for nurses working in community settings**

Participants reported that the community context is different from the hospital setting. They suggested developing clinical guidelines for the community context to guide home-visiting nurses on what to do when there is little available and how to deal with situations that may occur which are known to be an issue in the community context. One of the participants suggested writing a small booklet that could be useful in such circumstances. She said, “The best thing would be….a handbook of various situations that this is what you should do…So people could actually use it as a guide so they can get adapted to the situation therein” (Kathryn, Manager). Having a guideline and policies that are applicable to the community context and which are flexible and modifiable according to the situation was suggested by a participant. She said:

> I think that’s probably one of the biggest things and not having really firm guidelines in the community...there should be some guidelines as if you have to reuse dressing, well this is how you do it. You know you open it this way, you cut it this way...So say for arguments sake, if someone had a really grotty leg and there is no way for you to do anything, but they have a shower, we would probably suggest that they hop in the shower and give it a good cleansing in the shower... Obviously, we would not do the same thing if it was a central line. So it is a little bit hard to sort of say where our policies are actually originating from, because it’s very broad (Kathryn, Manager).

Participants reported that developing a guideline that addresses the environmental challenges for home-visiting nurses and which acknowledges the different contexts may be of benefit to home-visiting nurses and assist them in applying infection control practices and enable them to provide better quality care.

To summarise, the challenges that home-visiting nurses faced were related to the clients’ home environments and the unavailability of resources. These challenges impeded the implementation of proper infection control practices in clients’ homes. Participants individually attempted to address these issues and improvise strategies to overcome them.
The case summary

Infection prevention and control in this organisation mainly depended on staff education, which was implemented during the orientation program and through the mandatory annual education. The responsibility for infection control was integrated within the role of the branch manager. Issues related to infection control were discussed at staff meetings whenever issues arose. A consultation system was implemented in case any nurses require assistance or advice while they were on the road or at a client’s home. The consultation system included access to CNCs, who were always available in the office to receive home-visiting nurses’ calls and provide them with the required assistance. Home-visiting nurses could reach the branch manager for further assistance.

Infection control was implemented in this case through the application of standard precautions during client care. Policies of infection control were incorporated within the quality management manual. Infection control policies included basic infection control principles such as staff health, standard and additional precautions, risk and hazard management, the management of needle stick injuries, the monitoring of infection and waste management. The policies included brief information and the staff was directed to read related legislation and standards for more information. The infection control practices for client care were provided to the staff in a self-learning package. This package included guidelines that home-visiting nurses should follow in clients’ homes. The guidelines included information on standard precautions, involving hand hygiene, personal protective equipment (PPE), spill management, the management of exposure to blood and body fluids, and sharps and waste management.

The practices of home-visiting nurses were monitored through support days during which, each home-visiting nurse was scheduled to be accompanied by a CNC to evaluate their practice such as the aseptic technique and hand washing and to identify knowledge gaps. Education sessions for staff were arranged to address gaps in knowledge and practice identified during support days. Staff were also sent to conferences and training courses, for example courses on wound management, to develop their knowledge and skills. Basic infection control equipment was provided to the home-visiting nurses by the organisation. However, the home-visiting nurses still had issues with regard to controlling the clients’ environment, the availability of wound
management materials and hand-hygiene equipment. Infection control was evaluated through the clients’ feedback.
Case Report II

Description of the case

Organisation (B) is a non-profit charity organisation. This organisation offers a wide range of 150 different community and aged-care services across Southeast Queensland and other parts of Queensland to support more than 14,000 people in need. The aged-care services include help at home, residential care facilities and independent living accommodation. They run fully accredited residential aged care, offering a range of accommodation and care services throughout Brisbane and Southeast Queensland. They provide low-care, high-care, respite and special care while focusing on an individual’s specific needs at each of their facilities. The CBHVN services delivered to the clients and their families include wound care, palliative care, post-acute care, personal care, social support, and allied health services. The staff employed in this organisation are qualified in a diverse spectrum of services including youth services, counselling, aged care, emergency relief and disability services. They are specialised in various areas such as nursing, disability support, occupational therapy, personal care, physiotherapy, domestic assistance, mental health support and more. A brief overview of the infection control structures, processes and mechanism of outcome evaluation in one CBHVN branch of this organisation is provided next.

An overview of infection control in this organisation

The structure of infection control in this organisation depended on educating the staff on five infection control components: standard precautions, hand hygiene, immunisation, safe sharps handling and disposal and the aseptic technique. Mandatory infection control education was provided annually to all the staff. Implementing infection control in CBHVN depended on applying the above mentioned basic infection control practices in a client’s home. The primary home-visiting nurse was responsible for making plans and decisions with regard to the appropriate infection control practices applied to a client with infections. The next section describes the processes used to implement infection control in CBHVN in one branch of this organisation. The findings are now presented according to the six identified infection control elements.
**Element 1: Governance of infection control**

In this section, the structure and processes used for managing infection control in this organisation are illustrated including: infection control requirements, the line of accountabilities and responsibilities, the consultation system, communication strategies, and the monitoring and evaluation of infection control in CBHVN.

**Infection control requirements**

The analysis of documents showed that this organisation required each branch/program/service care facility to “[apply] an evidence-based infection control program” (policy document_7_infection control policy). To clarify this, one of the managers was asked about the structure of an infection prevention and control program for CBHVN and she said that the infection control policies were introduced to the staff during the induction program and then this training was repeated annually, as described below:

The infection control we have [here] is a component of induction for staff, where we cover infection control and we have some learning resources around those. Then we have an annual mandatory component that people who have client contact must do... Basically, it is four units, introduction to infection control, standard precautions and hand hygiene, immunisation, asepsis and PPE, and then additional precautions...They are actually in the current infection control education. They are the components that are considered the core components of infection control” (Jana, Manager).

Likewise, another manager mentioned that “The only infection control in [CBHVN services] is mandatory that we do it once a year. It is part of our work health and safety program…the infection control program that it is run here is very basic” (Amal, Manager). She further explained:

The registered nurses do wear gloves when they are going to a client’s home if they are going to do a dressing or if there is going to be any bodily fluid or anything like that. We also make sure that they have sharps boxes if there is any sharps there that need to be disposed of, if they are doing the blood sugar then obviously there is the specific boxes there that we need to put the needle into afterwards. This all will be written up on a care plan so depending on if there was infection control issues in a client’s home, the nurse would actually assess that first on that first admission and then that will be written in a care plan and for the other staff to see what precautions they would need to take, if they need to wear gloves, if they need to wear covered-up shoes, if they need to be careful of disposing sharps and things like that (Amal, Manager).
Participants reported that infection control depended on implementing basic infection control principles that are: standard precautions, hand hygiene and the aseptic technique as reported by a home-visiting nurse as follows:

The hand washing is the main thing. We wear gloves if there is any potential for infection like having contact with any body fluids or faecal or urinary contamination. Certainly, [we use a] sterile technique if we are doing things like catheterisation and if you are inserting cannulas for clients (Mona, Registered Nurse).

Another participant mentioned:

We would obviously wear gloves, we have an apron, [and] we use aseptic techniques when we are doing wound care so all our equipment is sterile that we use. We only use the equipment that is single use. We do not reuse it after, and washing hands (Lora, Registered Nurse).

The analysis of documents showed that in order to develop a “coordinated approach to [facilitate] the implementation of the infection control program based on the Australian Guidelines for Prevention and Control of Infection in Health Care (2010)” (policy docuemnt_7_ infection control policy), the organisation is required to:

Coordinate with experienced and qualified health care professional, to develop an annual strategic plan for infection control that included surveillances, education, and staff health strategies, to develop strategies to modify procedures and equipment associated with increased risk of occupational exposure to blood and/or body substances and ensure management of such strategies to monitor the effectiveness of the infection control program and ongoing compliance with regulatory and requirements. [Finally], to develop contingency plans to manage outbreaks of healthcare-associated infections and infection control critical incidents (policy document_7_ infection control policy).

To clarify this policy, a manager was asked if there was an infection control management plan in the organisation. She replied:

We have policies and procedures around maintaining those components of training, so using aseptic techniques, using standard precautions, blood spills, cleaning. I don’t think that we have a management plan as such. It would be to follow standard precautions or use additional precautions (Jane, M).

The above mentioned information showed that infection control depended on implementing basic infection control practices while providing care to their clients. The type of required infection control practices relied mainly on the personal judgment of the home-visiting nurse and it was written up in the client care plan according to the type of the provided care procedure. The structure and processes of the line of
accountability for the responsibility of infection control in this organisation are discussed next.

The line of accountability and responsibilities

The analysis of documents reviewed shows that infection control should be managed by “experienced and qualified health care professionals” (policy document_7_infection control policy). When a manager was asked who is responsible for infection control in CBHVN services in the organisation, she stated, “We have just employed a lady who has an infection control Master and we are probably looking at making her our infection control expert for aged care for the whole organisation. We count [CBHVN] as aged care” (Jane, Manager). When another manager was asked who is responsible for infection control in the CBHVN branch, she stated:

About six month ago we did have one of our staff that was our work health and safety officer. She was trained and she did infection control. She has since left and…gone to work for another organisation. So at the moment at this branch there isn’t anyone that is slotted into that role (Amal, Manager).

The above information showed that the organisation recently employed a person who is specialised in infection control to take on the role of infection control expert for the organisation. Inside the branch, there was no one designated to look after infection control issues. In view of that, the consultation processes for infection control were explored.

Consultation strategies

The analysis of data showed that the consultation strategies with regard to infection control issues included: (i) the staff’s personal judgement or (ii) consulting a colleague, (iii) consulting the nursing supervisor or (iv) consulting the government authority. As reported by one home-visiting nurse:

If I was not sure of the answer and I needed to consult with another professional, I could ring…my team leader, if I could not get a hold of her I could ring [senior nurse]. But normally as a registered nurse with the experience required to be in this position, you should be able to identify infection or risk and sign and symptoms of infection and from then on probably send them to their general practitioner for some further investigation (Sara, Registered Nurse).

The participants agreed that they would seek advice from the senior nurses for any issue that they face in the community, whether it is related to infection control or any other matter. One home-visiting nurse stated, “The senior nurse…is a point of call first...if I have any policy and procedures questions and if we could not troubleshoot
[them] we go probably up to the branch manager (Sara, Registered Nurse). Another participant also stated, “Well if it is something that we are concerned about, we certainly get straight onto the branch manager; they will find out what the best way to approach it” (Mona, Registered Nurse). One participant stated that sometimes they directly call the responsible government unit such as the infectious disease department. However, they are still required to notify the management in their branch. She said:

Sometimes we call infectious diseases. If we do not know, we will seek advice from infectious disease and see what we needed to do. I would certainly be notifying [the senior nurse], but I could call them myself. Anybody can ring that number. (Lora, Registered Nurse).

The above mentioned information shows that the participants relied mainly on their own clinical judgment when they deal with infection control issues in CBHVN service. For any consultation or advice, the staff would call specialised government sources such as the infectious diseases unit, or seek the advice of their managers at the branch. The process of monitoring and evaluating infection control is discussed next.

*The monitoring and evaluation of infection control (outcomes)*

The analysis of data revealed that the processes used to evaluate infection control included: monitoring staff competencies, monitoring incident reports and equipment audits. The document analysis showed that infection control in CBHVN was evaluated by implementing mandatory competencies (policy document_10_mandatory competencies procedure). These competency procedures were used to ensure that the staff had the skills and abilities to appropriately perform their jobs. It was the manager’s responsibility to monitor staff compliance and implement this procedure and at the same time, maintain the competency records. This competency procedure was scheduled for the staff upon employment and was repeated annually. To seek clarification, one manager was asked about the strategies used to monitor and evaluate infection control. She stated:

It is just the monthly monitoring of the incidence reports and also we monitor the compliance with mandatory training. We try and follow up with the service manager to make sure everybody had their annual infection control training. These are the two things we are doing at the moment (Jana, Manager).

The process of monitoring staff compliance with infection control practices was reported by one manager as follows:
They will just do the hand washing one, so that’s where they do the black light and germ gel in the branch. The other one for general infection control, they read the workbook and then they answer the questions and then they hand it to the manager (Jana, Manager).

Another manager shared her experience of how they assess their staff competencies by auditing the equipment and staff performance. She stated:

> Every three months we have that audit and we would be looking at the nurses’ kit and the care workers bag to make sure that they are carrying what they should do for their personal protection and the 12 months [performance] appraisal. [We would] certainly bring to light any issues that the nurse had or if the nurses were not following procedure or protocol, it would be brought up then (Amal, Manager).

The process of monitoring incident reports to evaluate infection control was explained by one manager as follows:

> We would rely on the local services managers to look at their data that they are getting and if they start seeing that one particular staff member having a lot of people with infections then it would be up to them to monitor that locally (Jana, M).

She further explained:

> Every month [we] look at the trend and [we] will often go back and ask the service manager to explain it to [us] so [we are] looking at it from a more strategic level but, addressing of the issue would be from the service level (Jana, M).

The above mentioned information shows that the processes for monitoring infection control in CBHVN in this organisation depend on equipment audits and performance appraisals for the staff and monitoring incident reports. More specific issues might be picked up from the performance appraisal and then the managers in the branch have to deal with those issues and solve them locally. The communication processes with regard to infection control are discussed next.

**The reporting and feedback mechanism**

Participants reported that the communication processes regarding infection control issues among the home-visiting nurses in this branch took place through a computer system, client progress notes, emails and weekly meetings. In the computer system, they have a program that is specific for this organisation where the home-visiting nurses can insert information about their clients and share it with each other. A participant described the computer system as follows:

> We have got [program] in our computers for all of our clients, so you can put a note in the computer and that sort of flags that on the database that this person’s wound is red and its pussy or something or he’s got a cough or chest [infection]
and that you have rung the general practitioner and made an appointment for them. So we talk to each other and let each other know what the situation was (Mona, Registered Nurse).

She then added:

We also write in the progress notes in the client’s home too and if we were concerned we might ring a doctor or we might send a fax off to them saying the wound’s red or not healing or whatever the situation is (Mona, Registered Nurse).

The third method was the weekly staff meetings. Matters of infection control were discussed weekly under the workplace and safety agenda item. One participant commented, “Yes. It will be discussed under workplace health and safety. We will ask the staff if there was any incident that week and it will be discussed under that topic” (Mona, RN). She then added, “If there was any incidence, the branch manager will make sure that everybody knew about it, so they make sure that some action was made about it to try to prevent it happening again”. She further clarified:

In the nurses’ meeting, we usually discuss what is happening like changes in the organisation, say a client with HIV that concerns have been expressed about. Like they might not be compliant with whatever and putting staff at risk or one of the incidents was that personal carers were not aware that he had AIDS. We had to do some education with them (Mona, Registered Nurse).

The last method for communication was via emails. Updates with regard to any policies or procedures were communicated to the staff through emails that are generated from a policy development site created by the organisation, as explained by one manager participant:

Whenever a policy either updated or created, our policy development site has an alert so every time a policy is reviewed or new one is created an alert goes to the person, as long as they have registered…Then every time a new policy comes out an email goes to you to say go and check out the new infection control policy. So we are making sure that staff are registered, particularly the managers, so we make sure that they get the alerts and then at their meeting she will pass that on to the staff (Jana, Manager).

Another manager stated:

We get an email … and it would say, this policy has been updated. Please print it out and let the staff know, or please bring into the next registered nurses meeting. Or we might get an email saying we are looking at this policy; this may change in the next two months but at the moment we are working on it so, we
will know. But, until we hear anything we will have to use the same (Amal, Manager)

Similarly, another home-visiting nurse stated:

If there are any updates with any policies and procedures, the management send us an email with an updated one and I think that we have to sign to say that we have read it and we also will participate in mandatory training to keep us up to date to with the practical (Lora, Registered Nurse).

To summarise this element, infection control in this organisation depended on educating the staff on fundamental infection control principles such as hand hygiene and standard precautions. The staff depended on their own clinical judgments if they have any infection control issues while they are on the road. Other methods of assistance were also available such as calling a colleague or the managers or calling specialised units. Infection control was evaluated by monitoring staff compliance with their competencies, monitoring the incident reports, and equipment audits. Reporting and feedback strategies for infection control in this branch depended on an in-house computer system, client progress notes, weekly meetings and emails. The implemented infection control policies for client care in this organisation are discussed next.

Element 2: Infection control policies and procedures for client care

The document analysis showed that infection control policies for CBHVN included: the sharps management and injury protocol procedure (policy document_8) and the blood and body fluids spill guideline (policy document_9). Other policies relating to infection control were included in the asepsis and standard precautions learning package (education document_2) and the infection control and hand-washing learning package (education document_3). One manager reported that the available policies were “hand-hygiene policy…use of asepsis…uses of standard precautions…immunisation recommendations for client contact care workers, use of personal protective equipment, how to clean a blood spill, [and] cleaning environment” (Jana, Manager). The policies and procedures for infection control were introduced to the staff in the orientation program and mandatory training. As one manager mentioned, “[Policies are introduced] in their annual mandatory training ...Also on the orientation when the nurse is orientated [infection control policies] is something that is on their check list that they need to go through” (Amal, Manager).

The applicability of the infection control policies to the community context was ensured by this organisation. One participant stated:
We have a central policy review group and what we do with that is we will ask for representation from each area so we will usually contact someone like the [branch manager] and say who in your service would like to represent you in the review of the infection control policy? [The branch manager] will usually point us to someone who has interest in infection control. So then we will contact that person and ask her for her feedback on the policy. So we will always look at the policies from the whole perspective of the [organisation] but we try to make sure that there is a specific area that cover community or residential or child protection or whatever (Jana, Manager).

Infection control policies were accessible online. As mentioned by one participant, “We can also look at it anytime we have the intranet so we can look up any policy to read. Those documents are available to us and if there is any changes we get notified by management” (Lora, Registered Nurse). Another participant said, “It is available online I believe as well as I think nursing supervisor has a hard copy” (Sara, Registered Nurse). The infection control policies available for CBHVN in this organisation included: hand hygiene, standard precautions, the aseptic technique, sharps management, waste management and spill management. Specimen collection and transportation and client education were not standard policies in this organisation, but they were explored to understand more about their processes in CBHVN. More detailed information on the processes of the available policies is provided next.

**Hand hygiene**

Hand hygiene processes were integrated in the standard precautions policy. It was mentioned in the policy of hand hygiene that, “Hand washing must be practised before and after [client] contact, after removing gloves, after contamination by blood or body fluid, as well as the usual times” (Education document3_Hand washing). General information on hand hygiene, the modes of transmission of infection, the type of hand-hygiene products, the correct technique of applying alcohol hand-rub and hand-washing techniques were provided (Education document2_ Hand hygiene). Information on when to wear, remove and change gloves was provided in addition to information on how to keep their hands healthy, including the reminder to avoid nail polish, rings or artificial fingernails (Education document2_ Hand hygiene).

**Standard precautions**

The infection control policy stipulated that standard precaution processes were to be applied to minimise the risk of the spread of infection by treating all blood and
body fluids as potentially infectious (education document 2_standard precaution).
The standard precautions included were, “hygiene practices relating to hand washing, the use of gloves and other protective clothing, as appropriate, and the safe disposal of waste” (education document 2_standard precaution). Instructions on treating, reporting, and documenting any needlestick injuries or mucous splashes immediately were included in the policies (education docuemnt3_standard precautions).

*The aseptic technique*

General information about asepsis and sterilisation was provided in a policy document (education document3_asepsis and sterilisation). Sterilisation and asepsis definitions were provided as follows: Sterilisation, “is a process by which all forms of living organisms are destroyed” (education document3_asepsis and sterilisation), while asepsis is “the term used to describe the state of being free of pathogenic micro-organism” (education document3_asepsis and sterilisation). Information on the aseptic technique procedures was also provided. Two types of techniques were explained: the medical and the surgical asepsis. Methods to achieve both techniques were mentioned. For example, methods to achieve medical asepsis were hand washing, damp dusting and vacuuming. Methods to achieve surgical asepsis included sterile techniques. The policy asserts that “When carrying out the aseptic technique, the carer must avoid reaching directly over the sterile field, refrain from handling sterile supplies except with sterile forceps…if there is a delay in carrying out a procedure after a sterile pack is opened, it should be replaced by fresh sterile pack (education document3_Asepsis).

*Sharps management*

The purpose of the sharps management and injury policy was to “provide safe and efficient means for handling and the disposal of needle, syringe and sharps objects to ensure that injuries do not occur” (policy document 8_purpose). The policy also provided information on sharps management, the sharps injury protocol, recommended vaccination, handling sharps, characteristics of the sharps container, and the processing of reusable instrument and equipment (policy document 8). The processes for sharps management included information about safety procedures that should be followed by the staff to prevent injuries for example, the correct handling of sharps, the correct disposal of sharps, and the reminder to not recap the needle (policy document 8_sharps management). The policy also provided detailed instructions that the staff should follow in case of any sharps injury, including incident reporting (policy document 8_sharps
injury protocol). Instructions on handling sharps and the characteristics of the sharps container were also provided.

The policy informed that the process of disposal of sharps should be done through an approved waste management contractor (policy document 8_sharps handling). One manager mentioned, “For sharps, [home-visiting nurses] should have in their bags a sharps container and then they would have someone to pick up their sharps on a regular basis from the service so they bring it back to [the branch]” (Jana, Manager). Another home-visiting nurse reported that the sharps disposal process was as follows:

We have a supply of sharp boxes here so that any client we are visiting we would dispose of it in there... We could keep it in that one. If they get full, then we bring them back and we can put them into the sharp waste bin with a lock on it and then we just simply take out an empty one to start again. I don’t carry sharps around with me. I have an empty one just in case, but I don’t have my own personal one where I take it in and out of the house. Each client has their own sharp box. The empty one I just have it in case I turn up to somebody house and it is full. Then I would just replace it (Lora, Registered Nurse).

Another manager said:

We are not supposed to provide the sharps container to the client but we do. The client is supposed to buy them, so in the cupboard I always make sure that there are sharps boxes in there. The nurse also carries one in her kit and also if a client is needing a sharps box ongoing then that is something that we would take out of the cupboard and then we would order that client a sharps boxes and they would pay for them. Once that is full, then the nurse would bring them back to the office and we dispose them. We have a proper plastic container and it’s locked and then when it gets full I ring up the people and they come and pick it up (Amal, Manager).

When one home-visiting nurse was asked if they are allowed to throw the sharps container away in the client’s home, she said, “No, we have our special sharps bin here. So should bring it back here or if the client has a chemist or a source that they can dispose of the sharps they could bring it as well” (Sara, Registered Nurse). Another participant commented on the safety matters for transporting sharps in the car as follows, “[It’s safe] because they have a safety lock on them. So what goes in, you can’t risk of hurting yourself once you put it in” (Sara, Registered Nurse).

The above mentioned information showed that the process of sharps disposal for clients was executed by providing the clients with a sharps container or asking them to buy one from the chemist to dispose of sharps. Then, the containers were brought back
by home-visiting nurses to the branch and disposed of in a special larger container where they were finally disposed of by a specialised company. Home-visiting nurses were also provided with a sharps container in their kits. Those containers were used to dispose of sharps in emergency situations or whenever the client does not own one. Home-visiting nurses were not allowed to dispose of any sharps in the client’s regular bin at home.

**Waste management**

Participants were asked about the waste disposable processes in the client’s home. One manager said:

> For infectious waste, I would assume that it is treated the same as anyone in community. They would double bag it and put it in the general waste. There was a guideline that came out from the Department of Health and Aging on infection control practices or something like that, so all our policies and procedures were created from there (Jana, Manager).

One home-visiting nurse reported that the clinical waste was disposed of in the normal garbage bin in the client’s home. She said, “That is disposed of by putting it in a plastic bag and sealing it and that goes in the normal garbage and that is acceptable for the [city] council” (Mona, Registered Nurse). Another participant mentioned that only chemotherapy-related items were disposed differently. She said:

> The only time any clinical waste maybe is different is if somebody’s on chemotherapy, we have special bags in their house. They still go in normal waste, but it’s got to be sure that it is definitely contained. There are purple bags; it’s called the spill kit. So if somebody’s on chemotherapy and they vomit, anything that is cleaned up from that has to be put in a special bag (Lora, RN).

To summarise, the clinical waste disposal processes in CBHV included double-bagging of the waste and disposing of it in the normal garbage in the client’s home. The only exception was when the waste is chemotherapy-related waste. Then, the home-visiting nurse had to wrap it in a special purple bag and throw it in the normal garbage again.

**Spill management**

There was a particular guideline for the process of blood and body fluid spills management. The guideline aimed to “provide a basis for developing and maintaining and implementing local safe work instructions for [the employees] who handle blood and body fluid or maybe exposed to blood and body fluid” (policy document
The processes included the use of standard precautions, the basic principles of blood and body fluid spills management, the equipment used in cleaning a spill, the appropriate handling and disposal of contaminated waste (policy document 9_blood and body fluid spill management). Appropriate processes for handling and disposing of sharps and details on the cleaning procedures for the spill according to its size (spots, small or large) were also illustrated (policy document 9_blood and body fluid spill management). Additional precautions were mentioned briefly in the policy. A link to Queensland Health’s infection control guidelines was provided for more information on additional precautions.

**Specimen collection and transportation**

Participants disclosed that they collected wound swab specimens at a client’s home and sometimes transfer them if it was necessary to do so. As one participant stated:

> If it is difficult for them to get to the doctors, I pick up the swab and take that sample and give it to the carers to bring back to the lab. So it is not a standard thing, but it might happen in circumstances where it is very difficult for that client to get to the doctor with mobility. It depends on client circumstances to transport and mobility (Sara, Registered Nurse).

She added that with regard to the procedure on how or where they transfer the specimen, “You would wrap it up on a blueie. We don’t have bags…It would be probably best if we had little bags” (Sara, Registered Nurse).

For blood and urine specimens, the client was usually advised to go to the doctor’s clinic or if the client is not mobile, then the nurse could arrange for the pathology to give them a visit at home to collect the sample as one participant said:

> We don’t take blood…So if the doctor wants blood taken [then they]…would organise for pathology and they would… do home visit to take blood. If, again, I felt that a client had a urinary tract infection, I would recommend that they go to the doctor and give a urine sample…A lot of our patients are housebound or they have decreased mobility, so, yes, I have arranged for pathologist to go to the house to take a sample if that is what the doctor wanted (Lora, Registered Nurse).

To summarise, specimen collection and transportation was not standard or routine for this organisation; however, sometimes home-visiting nurses voluntarily do this for those clients who were unable to go to GP clinics or for clients with special circumstances.
Client education

The importance of client education in CBHVN was emphasised by the participants. One participant mentioned that client education made implementation of infection control practices and the prevention of infection easier as she explained:

We have often clients touching their wounds once we take the dressing off and we have to say “no” or we see them possibly using tissue or something to dab ooze, so it is just educating them what is safe for them to do and what is going to increase the risk of infection. They are pretty perceptive if they think this going to risk their infection, you will find they won’t do it…Probably it does make a difference and it probably works nine out of ten times, but you still get that odd client who is really uncompliant and you can only do the best that you can; the rest is under their control. So, in the community the client has a lot of control about their outcome with infection control (Sara, Registered Nurse).

Client education is important in CBHVN services, as informed by participants. It eases the challenges that nurses face in the community context and increases the client’s cooperation. Therefore, it will improve their health outcomes and decrease the possibility of acquiring infections.

To summarise this element, infection control policies for client care included basic infection control principles, which were introduced to the staff during the orientation process. Policies were accessible online for all the staff. The applicability of policies to CBHVN was ensured, as stated by one participant. Sharps were disposed of in sharps containers and the participants were allowed to transport them to the office for proper disposal. Nevertheless, there was no policy for specimen collection and transportation in this organisation; sometimes, participants voluntarily do this for the clients who were unable to go to GP clinics or for those clients with special circumstances. The processes of staff development and education with regard to infection control are discussed next.

Element 3: Staff development and education

Infection control education included an orientation program and external resources for staff development. Both are explained in more detail in this section. The structure and processes of the orientation program are explained next.

The orientation program

The orientation program included the implementation of a mandatory competencies procedure program. Competence is defined by this organisation as “the acquisition of knowledge, skills and abilities at a level of expertise sufficient to be able
to perform in an appropriate work setting” (Policy document 10). The document provided guidelines for the “requirements and obligations for mandatory competence, maintenance and reassessment within [the organisation]” (Policy document 10). These mandatory competencies were applied to ensure that all the staff are competent and are able to perform their jobs according to the organisation’s standards and policies. The competencies procedures included different themes such as fire safety, response and evacuation; health and safety; infection control and other essential themes (Policy document 10). The mandatory staff development and education for infection control was given to the staff in the two learning packages, namely: infection control and hand washing, asepsis and standard precautions. These two packages were given to the staff in an orientation program when they are first employed. One manager reported that the orientation program included a lecture on infection control. She said, “There has been a PowerPoint”. She further explained the process of infection control education as follows:

They will just do the hand washing one so that where they do the black light and germ gel in the branch. The other one for general infection control, they read the workbook and then they answer the questions and then they hand it to the manager (Jana, Manager).

Another manager participant further explained:

The PowerPoint is what our branch manager did, is mandatory once a year. So when a nurse does start, at some stage [in the next] few months she will need to do that mandatory training and part of that is infection control and work health safety. It is normally in here and there will be a few, there would not be just one or two. If we had a few people that were due then our [branch manager] will organise a training and bringing those new nurses that have not done that yet plus any other staff that needed to have it done in that 12 months period (Amal, Manager).

One home-visiting nurse reported that the orientation process included basic, mandatory training and also clinical assessment for clinical procedures. She shared her experience of mandatory training and practical competency as follows:

When I started here, they have like an orientation list and a lot of it: CPR, your basic mandatory, department of fire, infection control, those sort of safety things and you go over what is expected from you…they also then expect you to do specific competencies in infusions and anything else that you have not done before… we typically do one week of [going out] full time with someone (Sara, Registered Nurse).

Another home-visiting nurse explained her experience of the orientation program when she first started as follows:
When I started here, I went out with all the registered nurses for I think at
least a full week and then a couple of days into my second week. I went out with
them seeing different types of clients for different needs to get me used to the
type of work. In terms of work out in people homes, orientation was with a
registered nurse and we went out for may be a week and a half and I watched her
practice in the home and then she equally watched me back and then reported
back to the branch manager…so she watched my ability…So she would have
watched my hand washing technique (Lora, Registered Nurse).

The analysis of documents showed that home-visiting nurses were obligated to do the
health and safety and the infection control mandatory competencies on their initial 30
days of employment and then annually (policy document 10_obligation/requirement).
One participant stated, “We do have a once a year infection control thing for everyone”
(Mona, Registered Nurse).

The analysis of policies showed that the people who might provide the infection
control training included the infection control nurse/practitioner/or manager delegate
(policy document 10_assessor/trainer). The people who may provide the health and
safety training included the workplace health and safety advisor/officer, manager or
delegate (policy document 10_assessor/trainer). The methods of delivering health and
safety and infection control training were as follows: through face-to-face sessions,
teleconferences supplemented with DVDs, or self-directed learning packages and
learning models (policy document 10_Method).

When the participants were asked about the methods of delivery for infection
control education, one stated that it was through lectures and a workbook. She said,
“We do receive a lecture plus the workbook every year. The nurses have got a
workbook that they have to do…you have a lecture about that then” (Mona, Registered
Nurse). Another participant thought that it was only a workbook. She said, “It was an
informative document…I am trying to recall, but it was a printout document just with
some information of what is expected. It was included in my orientation package” (Sara,
Registered Nurse).

The above mentioned information showed that infection control education was
part of the mandatory general orientation program. The mandatory infection control
education included infection control learning packages, lectures and hand-hygiene
competencies. The methods of delivery included a workbook and a PowerPoint
presentation. The evaluation strategies included completing a set of questions at the end
of the workbook and performing a hand hygiene practical test. The home-visiting nurse
also accompanied one of their experienced colleagues for one week to introduce them to
the routine of the work and to assess their competencies in performing different clinical nursing procedures. Other resources used for staff development are explained next.

**Resources for staff development**

Other resources were also used by this organisation to keep their staff knowledgeable and updated with regard to infection control issues. The resources included: organising lectures for home-visiting nurses, or sending the staff to conferences, training courses and staff meetings.

Participants mentioned that their manager may arrange for them to attend education courses for example, a wound management course. At the same time, company representatives come to the branch to provide them with education on wound management. One home-visiting nurse said:

If there is a specific need, like something different like VAC dressing or something that what not might be familiar to us, then the agency sends a referral through and we would be aware of the problems then so the branch manager would organise it if we felt that nobody had the skill here to do it or we were not familiar with it. Then we just organise that through one of the hospitals (Mona, Registered Nurse).

She further recalled her experience and said:

The TB nurse came in when we first started to get clients with TB, and gave us all the talk on the management of it…Or two of the girls have just gone to an education session on VAC dressing, so if there was anything out of the ordinary we go to the hospitals where the unit was and sort of learn what the specifics were about (Mona, Registered Nurse).

Another manager provided an example as follows:

I recently organised for somebody to come and talk to us about chemo cytotoxic drugs and when we should be using spill kits. I arranged that through the hospital…so [someone from the hospital] came and spoke to us and that is when we could ask questions about if our chemo clients have to have a spill kit or if they can just have the purple bag. So that is something I would organise or the clinical nurses would organise specifically for their meetings if they felt that they needed some external education (Amal, Manager).

This participant also reported that home-visiting nurses were sent to conferences according to their interests:

The [home-visiting nurses] have a certain amount of education that they can use each year as far as personal development and personal training goes and that would depend on what their interests were. So, if it was a wound-care seminar then… they can ask me if they would like to go to that education day and I would
sign them off, if we can give them the time off. They would go to that education day and be paid for it (Amal, Manager).

Another manager mentioned that external resources were used to educate the staff on wound management:

For wound care, we have an agreement with [Wound Dressing Product Company] and they provide us with education for our services every year. They do our wound stuff really. [The wound product company] runs a conference twice a year and our staff have got free access to that conference if they want to go. It’s purely wound management (Jana, Manager).

One manager mentioned that specific issues and challenges that home-visiting nurses may face would be discussed at the team meeting “Any specific training would be done in that team meeting, which is once a fortnight” (Amal, Manager).

To conclude, staff development and education in infection control included mandatory and ongoing education. The mandatory education included a self-learning workbook and hand-hygiene competency. The education was initially provided to newly employed staff and then annually. The clinical practices of staff were also assessed initially, and then annually. The ongoing staff development includes other resources for education such as inviting companies’ representatives to provide education to the staff at work or sending the staff for external courses and conferences related to their jobs in the community setting. These sessions were arranged according to the staff requests and needs. The next element discussed is staff health and safety.

Element 4: Staff health and safety

The structure of staff health and safety involved two policies that recommended immunisation and management of exposures to infectious materials. The process of both policies is explained in detail.

Personal health and the immunisation program

The analysis of policies showed that “all staff who are or will be exposed to sharps hazards are encouraged to have a Hepatitis B vaccination (Policy document 8_vaccination). When a manager was asked about the policies or employment requirements for staff health, she said:

All we request on employment is that they show a certificate to ensure that they have Hepatitis B immunisation. Other than that, we don’t. In that orientation session [we talk] about immunisation and we give them an immunisation schedule and suggest that they should have their tetanus and all that sort of stuff, but we don’t insist on it. We only recommend. We [provide] influenza [vaccines] every year (Jana, Manager).
Some of the home-visiting nurses in the study were not sure if they were asked to provide physical examination records or proof of immunisation when they were first employed or after that. One participant stated:

I can’t remember if I gave that one when I started here. I remember I have been asked about it, but I can’t remember if it was verbally or brought in my forms. I know it was discussed, but I can’t remember if I brought my certified copy of my vaccination in (Sara, Registered Nurse).

The above mentioned information shows that staff were only required to be vaccinated for Hepatitis B. The only vaccine provided to the staff by the organisation was the annual influenza vaccine.

The management of needlestick injuries and exposure to blood and body fluids

The analysis of documents showed that policies with regard to sharps injury management included information on sharps handling, the needlestick injury protocol and characteristics of the sharps container (policy document 8). The needlestick injury protocol included information on how to deal with a sharps injury and how to report the injury, whom to report the injury to, referral after injuries and follow-up processes (policy document 8).

One participant reported on the processes for needlestick injuries and exposure to blood and body fluids as follows:

It would be a local procedure. We have a procedure talking about how to clean a spill, but if they got a needlestick injury or they had an open wound exposed to blood, they have to contact their manager. The manager would then send them to a local medical practice or emergency room and that would be handled then from there but they would have to fill out incident report and...work health and safety would follow that up...We have got two work health and safety liaising officers who come and talk to the staff making sure that they followed all the procedures and offer them counselling and whatever else they need (Jana, Manager).

Another manager similarly explained:

The person receiving the needle stick injury would go to her superior and let them know that this is what has happened. They would need to fill out in a staff incident form saying what happened and then they would need to go to the GP and ask for some blood tests to be done. That would be followed up by the [branch manager] and [nurse manager]. They would be having a conversation with that staff and the staff would be asking the GP for a confirmation that staff member had gone and had blood tests done and the results were clear or whatever. We would need to have that documented and that would go out into
the staff file. Copies of the result and copies from the GP saying that it is all clear and it’s been resolved (Amal, Manager).

Another home-visiting nurse explained the process of how to deal with needlestick injuries in more detail:

Well if I was out in somebody’s house and I got a needlestick injury, first of all I will be squeezing my finger as hard as I could and then running it under the tap. I would also know the time and the date and the name of the client. I would also have to make sure that I have a history of that client, you know for their medical history… Then I have to come back and I have to complete a staff incident form… I think that I have to go and have a blood test somewhere and then have a repeat blood test…I don’t think that I could tell the client that I have to send for an HIV test. I just have to check and wait for the result and then check again after three months (Lora, Registered Nurse).

The manager also provided information about policies and processes of spill management, including to clients who are undergoing chemotherapy:

We have also policies on clients having chemotherapy and what precautions we have to have in the house depending on what type of chemo they are having… There is a special kit that we have that we take and leave it at the client’s home so if there is anything spilt then, we have to use that special kit or the family does to actually dispose of whatever has been spilt, and there is a purple bag that we actually need to put everything into. The spill kit is mainly used for the chemo clients, anyone that has blood or body fluid that not on chemo then we would just double glove and double bagging and tie everything up in the end and putting it outside in the rubbish bin… We keep [the spill kit] in the client’s home until they finish their chemotherapy. It may never be used, but it is there if we need it and if it is not used it comes back and it goes back in the cupboard again (Amal, Manager).

The processes of managing sharps injuries and exposure to blood and body fluids, including dealing with the incident, reporting it, following it up, counselling and documentation were all provided in the policy. Participants were familiar with the required policies and procedures. Chemotherapy was included within the spill management policy of this organisation. The next element discussed is the processes of monitoring infections in CBHVN.

**Element 5: Surveillance systems**

The analysis of policy documents showed that there was a form for infection surveillance reports; however, this form was only used for aged-care facilities and not in CBHVN services. When one of the home-visiting nurses was asked if they have an infection surveillance system in home care, she replied, “No, not that I am aware of. From my understanding if any client has any infection [the senior nurse] will be informed so that could be a process that she handles, but my job is to inform her” (Sara,
Registered Nurse. Another home-visiting nurse was asked if they use an infection surveillance report form and she replied, “No, we don’t” (Mona, Registered Nurse). According to one manager, infections notification in CBHVN was integrated with the incident report form. She explained the process of infection notification as follows:

-In the client incident form, there is a part that relates to if there was infection or contagion...So all that should be filled out and [then there is a part that] says what other investigations have been raised, has it been a hazard report? So [staff] have to fill out all that. [Then] a corrective and preventative plan. What the nurse is saying [what] she is going to do and when and then it would go to myself and I would be then be obviously following this through and saying to the nurse ‘How are we going to review it? ’Who is the person who is going to review it?’ I make sure it is being completed. I sign that off, [and add] additional comments...and that is when it goes into the register. So it does not go into the register until it has been sign off and completed...Once it is completed and I have put it in the register, then I will give that to the branch manager and [she] then makes sure that she is happy with what is in the register and it has been signed off and then she files it (Amal, Manager).

She further explained the action taken and follow-up process by giving an example as follows:

If the client had an MRSA that would be definitely documented in our sheet run and on the [computer system] in bold letters. The care plan would also be updated as far as what precautions were needed, depending on what we were doing to that client with MRSA. It would also be written in a care workers run (our client has MRSA please make sure you double glove and apron or whatever needed to be done). The nurse would then follow up with the GP to make sure that any swabs that needed to be done were done for a clearance of the client. It would be documented on that infection control part in the incident form as well so we would be following it through together. But there is not normally anything huge that we need to follow up on. Normally [the nurse] would do a note in the [computer system] if she had to go out and state what had been put in place, care plan updated and she will send me a copy (Amal, Manager).

The manager also explained the process of following up the results from the GP:

We would contact the GP by the phone or we would send a letter requesting those results to be sent here and they would come here and be followed up depending on what the results were and then those results would be filed in the client file here...Once the client is clear, that comment will be taken off the run sheet and they will be updated on the computer and in the progress note and the clinical nurse would let her staff know in the team meeting that the client is clear you no longer need using this or doing that (Amal, Manager).

The incident report was then analysed by a designated person in the head office. The process of analysing data from the incident report was reported by one manager as follows:
We do incidence reporting and analysis [data] and one of those is infections...the infections [are] when the services report that residents or clients developed respiratory infections, urinary infections, wound infections, gastro, and then every month [we] look at those reports. [We] do a bit of analysis, if that is higher this month in [a city, we] ask them for more information and then [we] report that to our care governance committee on a monthly basis. The reports are given to the regional manager [of this area]. Once a quarter [we] do a trending analysis (Jana, Manager).

The same manager reported that the action taken by the head office with regard to the result from the incident report analysis is mainly providing education to staff. She explained:

We are trying to develop the capacity in the services so with the [nursing manager] and [the nursing supervisor] to deliver that annual infection control based on the analysis of trends. So if we see that clients in the [specific area] seems to have more wound infections, then we would say to them you probably need to do more education on aseptic technique, wound care, etc. But, that would be up to local service [branch] because every branch is different... So, [we] would...look at their [infections] trends and then [act on that] (Jana, Manager).

When the manager was asked about the process of notifying infectious diseases, she said “We comply with the guidelines. We ring up the local public health office from the listed notifiable diseases. That will be reported to [head office] as an incident and [we] will pick that up in my monthly analysis” (Jana, Manager).

To summarise, the infection surveillance system in CBHVN was integrated with the incident reporting system. Infections were reported to the senior nurse and to the treating team through emails and weekly meetings. Infections were also documented in the progress note of the client. The data were then collected and analysed by a designated person in the head office and reports are given to the regional manager. Education action was taken according to the trending result of each local branch individually and locally. The next element discussed is the environmental context.

**Element 6: The environmental context**

Participants reported that there were some environmental issues that adversely affected the implementation of infection control practices in CBHVN. The issues included: the unavailability of equipment (hand-washing facilities, dressing materials and sharps containers), environmental hygiene and clinical guidelines for CBHVN. Each issue is discussed in more detail next.
Resources (unavailability of equipment)

Basic infection control equipment was provided to the home-visiting nurses by this organisation. As reported by one participant, “We have unlimited supply of gloves as we need, we have latex-free gloves, chlorhexidine wash, sterile gloves, masks, aprons, foot covers and goggles” (Sara, Registered Nurse). Another participant explained, “We also have the special ones [N95 Mask] too if we have to have the one for TB…the chemo purple bags and the spill kits” (Mona, Registered Nurse). One participant also stated that a small kit is also provided to them, which includes the basic materials:

We carry a stock kit with us…the company supply us with a kit with a limited number of products that we can use…I would have a sterile dressing pack in my kit that I could use at that client’s house for that initial visit (Lora, Registered Nurse).

The manager similarly reported that essential PPE is usually provided to the staff:

Every three months we have an audit and part of that audit is to make sure that our care workers and nurses have specific items in their kit they take out…there must be a certain amount of aprons, a box of gloves, the hand rub must be in date not expired, they must have plastic goggles, and the over booties that they can wear on their shoes (Amal, Manager).

One of the participants reported that the biggest challenge is being away from direct resources and stock. She said:

I think the biggest [challenge] that we would become across is probably having being away from office. If we run out of solution, it should not happen but it could happen, so running out of supplies that [we] need, being away from the office (Sara, Registered Nurse).

As mentioned above, basic PPE was provided to the staff by the organisation; however, the clients were asked to provide the staff with other equipment such as hand-washing facilities and any materials that are used for their care such as wound management materials. Participants reported that sometimes they faced challenges when it comes to those resources. Participants also reported that sometimes hand-washing facilities in clients’ homes were not appropriate for use. One participant said, “There might not be adequate hand-washing facilities in the house where we are” (Lora, Registered Nurse). Also, hand-hygiene materials such as soap and paper towels might be not available in the client’s home. One participant commented:
[Clients] do supply us with paper towels. We do ask them to provide soap. If someone has a particular procedure that is quite sterile, such as a catheter or a deep wound and you really want to keep it infection free, we do ask them a paper towel and use that Dettol base soap, that one where you don’t have to touch anything, its automatic. We recommend that, we understand that in all cases it can’t happen due to different financial, social, and economic situations. So we recommend that and a lot of the time they do have paper towel and they do have a form of soap that is pumped rather than a bar of soap (Sara, Registered Nurse).

One home-visiting nurse reported that sometimes she had to stop at public toilets to wash her hands if she knew that the hand-washing facilities in the next client’s home were not appropriate:

"Usually I wash my hands when I got to somebody’s house and then I would wash them before I left. So when I get to the next person I am washing them anyway. If I felt like the next person house I would not be able to wash then again, I would probably stop at MacDonald’s to wash them because, you can’t just keep alcohol gel in your hands all day. I mean I know you could do it a couple of times, but that is not going to be effective…so if I had to wash them then I had to go to MacDonald’s and wash them (Lora, Registered Nurse).

Another participant stated that she used the client’s hand-washing facilities if she had to decontaminate her hands; however, she backs it up with an alcohol-based hand rub:

"I would always wash my hands there but then quite often the soap is just sitting on the sink, but you know if you have to decontaminate your hands for whatever reason I would certainly use their bathroom, clean yourself as best as you could. But then I use the chlorhexidine afterwards because it depends on what you got there, usually they got their towels hanging there. There is no clean hand towel. One lady used to put a hand towel out every day, she says, ‘It’s clean, dear’, but it is the same one as yesterday and day before (Mona, Registered Nurse).

Participants reported that they used the alcohol-based hand rub gel when the basic hand washing facilities equipment was not available:

"If we get to somewhere where we don’t feel washing our hands would help…In the community, maybe it is cleaner not to wash your hands in some people’s houses, so we do carry alcohol gel…While I am aware that does not replace hand washing; in some instances it is the best we can do (Lora, Registered Nurse).

Another participant shared her experienced regarding the availability of hand-washing facilities:

"We obviously have to wash our hands. Sometimes we do come across a barrier and people’s homes where they don’t have paper towel and their hand washing facilities aren’t that clean, so in that case I would always use my chlorhexidine (Sara, Registered Nurse)."
Another participant shared her thoughts as follows:

A lot of clients we go into, you would not want to use their bathroom to wash your hands or dry your hands, so in those situations we would not wash our hands or use the hand towel. We would use our hand sanitiser (Amal, Manager).

The second issue raised by the participants was regarding the availability of wound management materials. Wound management materials were not provided to the clients by the organisation. Clients had to pay for them, as stated by one participant, “The client has to pay for all the wound care products and that kind of things. We would order them through [local provider] and then the clients pays for those” (Mona, Registered Nurse). One home-visiting nurse said that sterile water was one of the items that were not usually available because the clients refused to buy it:

Sterile water is one big issue. The clients do not like to pay for sterile water. They think they have got water in their tap, why they should have to pay for water to be delivered…I would tell them then the option is that we would use cooled boiled water. So they boiled a kettle earlier that morning that would be as sterile as we could get without actually purchasing sterile water (Lora, Registered Nurse).

One participant stated that when the clients cannot afford their wound dressing materials, they try to use the second-best product, which may not be of the same quality as the recommended one, “We had to try and be a little bit creative with what you use. It might not be the optimum thing, but we use the next-best dressing products” (Mona, Registered Nurse). When she was asked if she had experienced moments when the clients were not able to buy their materials, she said, “I have a lot in the community, unfortunately”. She provided an example:

There was one man who had a horrible leg ulcer and he was a disabled person, on a disability pension, in supported accommodation. So they had to pay for the dressing. They are very careful, because of their budget, to what we use. So it was a battle for a long time. You know they are putting a lot of combines on and things that are not really appropriate for the amount of ooze that he had in his legs. They sort of just got the best they could and negotiated with the disability services to get whatever they could. It was going to be as cost effective as possible. Some of the other wounds are, if you got someone that has got an extensive malignant wounds, you have to be a bit creative with the wound management for that too…it might be if they are really extensive that you have to look at things like using incontinence pads or something like that, which are going to absorb all the exudate and minimise the risk of infection, but not cost a lot (Mona, Registered Nurse).
Another participant stated that besides using alternative materials, the clients may get a reduction in the visit fee:

For wounds, they would need to purchase [the dressing]...So what we try to do is we have to sort of say to them that we need them to pay for them, but what we can do is maybe reduce the price of our visit. If finances are problem we can ask them if they need a reduction in the nurse visiting...or in some circumstances the manager will do a full exemption, where they get the nurse visit for free, but they would have to buy the materials. Unfortunately, what happens is if somebody has really a chronic wound, we may need an expensive wound care product to heal that. If that client cannot afford it, we would use an alternative one but it would take longer to heal the wound. We would have to go with what the client could afford, but we would visit for longer (Lora, Registered Nurse).

Another participant reported that the donated materials were usually used for those who are desperately in need:

A lot of nurses are lucky to get donated dressings, so the nurses then would asked each other if they had this particular type of dressing or can I do a swap with that one or they would look in the cupboard to see if there any wound care dressing that we bought and that they could use...It does not happen very often, but if it was a fact that the money was an issue then we would still order them, but we will be ordering cheaper dressings (Amal, Manager).

The third issue raised by some of the participants is the unavailability of sharps containers. As mentioned previously, the home-visiting nurses usually dispose of sharps in special sharps containers. However, there were times when a participant had to use sharps when she was not prepared and had no sharps container with her. The participant said:

It does happen in the community, not very often, but there are situations when we didn’t realise that they needed a sharps container. So if it is a one-off, we would recap, say a vitamin B12, then the nurse would actually bring it back and dispose of it here and then next time they would take a sharps box out. They should make a note on the computer and send it to the other nurses so they know the next time they should take a sharps box out (Amal, Manager).

She further stated that she had been in such a situation:

Yes, which is an interesting one. I probably cannot speak for the other RNs, but probably what I have done is that I have gone to dispose of it, if it is a needle, then I would have put it back into its cover, because I have to. I know that you are not supposed to do it, but I would and I either wrap it up in some newspaper and pop it in the rubbish bin or I would put it in my kit and bring it back to the office and dispose of it here (Amal, Manager).
To summarise, hand-washing facilities were not always appropriate or available in the community context. The home-visiting nurses relied mainly on alcohol-based hand rubs when the hand-hygiene facilities in the client’s home were not appropriate. However, alcohol-based hand rubs were not helpful sometimes, especially when the nurses needed to decontaminate their hands. Some home-visiting nurses had to use public toilets, while others prefer to use the client’s hand-washing facilities and then back it up by using an alcohol-based hand rub. Participants used several strategies to overcome the shortage of wound dressing materials. They either used an alternative product, reduce the fees for their visits or use donated materials [staff get] from [other] the wealthy clients. The disposal of sharps was not a very common issue, but it does happen sometimes and at times, a dangerous practice may occur.

**Environmental hygiene**

Participants reported that environmental hygiene was challenge in the CBHVN context because the people are different in the way they choose to live. Many clients are elderly and are already struggling. One of the participants said, “[environment hygiene is a challenge] in some people homes, because some of them are not the cleanest or somebody is elderly and just straggling on their own at home” (Mona, Registered Nurse). Another participant said, “It is challenging. People live to different levels. How of somebody lives it may not be how [we] choose to live, but we just have to make the best of the situation that we have got there” (Lora, Registered Nurse). One of the participants gave an example of the challenges in a client’s environment as follows:

The diverse client situations where you cannot control exterior things, such as children, pets, the demotic statues of the house, smoke…Pet hair, animals and things actually jumping near the client so you have to lock them away. Probably children coming and touching that can be a challenge that you have to…give them toys or something (Sara, Registered Nurse).

Participants tried their best to overcome this issue, and one participant provided an example:

I would clear as much way as I could without offending the client. So to say I need a certain area then what I have to do with the dressing pack that would have to my sterile field. So I would have to work to the best of my ability in that sterile field even though around me is not [sterile]. And then at the first opportunity I would wash my hands well (Lora, Registered Nurse).

Another participant commented, based on her experiences, as follows:
A lot of the time you can’t do very much. We wouldn’t go wiping down surfaces with alcohol chlorhexidine. Say for instance today, I had to change a man’s urinary catheter and the house is pretty dusty and pretty dirty so I got his wheelchair and I used that because that was the cleanest surface to put the catheter tray on. I sort of made a sort of spot like that. We have got sterile catheter trays. So I put the catheter tray so I sort of used that as a sterile field and then you can put the catheter on that and just try to do it as clean as you can. We also used to use double gloving too because you know you are on your own and you don’t have any one to take the catheter out. Then for you secondly to insert it so, we always double glove and use the second pair of gloves to take the catheter out with to decrease the risk of contamination. Both of gloves are sterile (Mona, Registered Nurse).

Another participant shared her experience:

I was fortunate enough in my practice to have a client [where] his wound had healed and he actually ordered a whole bag of blueies. Blueies are about 2x1 foot and are a sheet of material. If you place it down it gets rid of any animal hair and it provides a clean surface. So, because I had that donated to me I have got so many extras that we sort of shared them around and we put one of them down so that we can make sort of the best environment that we can in that scenario and then put the dressing on top of that (Sara, Registered Nurse).

One participant provided suggestions for improving the application of infection control practices in the clients’ homes by having a graph or guide chart:

Probably individuality and diversity [are issues] so it is not going to be a simple step-by-step thing as it might be in the hospital. You are going to get more diverse situations, so probably maybe have a graph that has a feedback system so that if we are coming up to barrier such as environmental, smoke, pets or children, there is a feedback loop to use your chlorhexidine in your car. Whereas, if you are not coming out to that barrier, you can use the standard hygiene in the house. So if [we] are going to have a poster guideline….flow chart…I think that would be good to be implemented. That would break down how long do we need to hand wash for each sort of scenario…and if we could have that one in each of our handbooks (Sara, Registered Nurse).

To summarise, the client’s home environment was one of the challenges that the participants in this organisation faced. The home-visiting nurses tried their best to overcome this challenge. They suggested developing a flow chart that they could use as a guide to deal with different scenarios they faced in a client’s home.

The case summary

Infection control in this organisation depended mainly on educating staff about safe infection control practices when they were first employed and then annually. The staff were educated on the following infection control practices: hand hygiene, standard precautions, the aseptic technique, spill and needlestick injuries management and the
safe disposal of sharps. Staff were also sent to training courses on wound management as part of staff development. External experts were also invited to provide the staff with education, when it is required.

The responsibility of infection control inside the CBHVN branch was distributed among the branch manager, nurse manager, and nurse supervisor. There was no designated person for infection control. For advice on infection control matters, the staff either relied on their own clinical judgment, call a special government centre or call their nursing supervisor, in addition to referring clients to their general practitioners for treatment or further investigation.

Staff were recommended to have Hepatitis B immunisation and they were provided with influenza vaccination annually by the organisation. The newly recruited staff were not obligated to provide proof of their immunity or a medical examination report to clarify their health status.

Infections were monitored by the primary home-visiting nurses, documented in the client progress notes and communicated among the treating team, including the client’s GP. Infections were reported to the head office through an incident report form. Every three months, the reported infections were tracked and trended by a designated person in the head office. If there was a major outbreak in one branch, the designated person from the head office will followed up with the branch manager on how the problem was solved internally.

Infection control was evaluated by monitoring the staff compliance with infection control competencies, monitoring and following up with incident reports and equipment audits. Reporting and feedback strategies for infection control in this branch depended on the computer systems, client progress notes, emails, weekly meetings and emails. Issues of implementing infection control in the community context for this organisation included: the lack of hand washing facilities and wound management materials, sharps disposal and the client environmental control.
Case Report III

Description of the case

Organisation (C) is a not-for-profit charitable organisation that provides homecare, retirement living and residential aged-care services to more than 29 retirement communities throughout Queensland and New South Wales. The organisation runs 24 retirement living and 24 residential aged-care facilities across Queensland and New South Wales. It runs 13 CBHVN branches across Queensland, with each branch providing a broad range of personalised home-care services to enable people to remain independent in their own homes. A team of professional and trained staff assess the care needs and tailor the most suitable combination of services to the clients. The staff include occupational therapists, physiotherapists, divisional therapists, podiatrists, registered nurses and speech pathologists. The services are designed to meet the social, health and lifestyle needs of the clients and include personal care, domestic assistance, transportation and meal preparation, nursing care, palliative care, medication supervision, transportation home-based respite, home visiting and social support, wound management and pain management. CBHVN services continue to expand rapidly and the organisation assists more than 5000 people annually. A brief overview of the infection control structures, processes and mechanism of outcome evaluation, in one CBHVN branch of this organisation is provided next. The findings are now presented according to the six identified infection control elements.

An overview of infection control in this organisation

Infection control in CBHVN in this organization was informally structured. When one manager was asked if there was a formal structure for infection prevention and control program for CBHVN, she commented, “Not that I am aware of” (Jane, Manager). Participants reported that the implementation of infection control in CBHVN depended on practising hand hygiene, PPE and sharps disposal, which were introduced to the staff during the infection control training, as a manager described:

We utilise PPE. So we do have a part of our mandatory training, we do provide the infection control training. We do hand-washing competencies and we supply them with the PPE required that are gloves, apron, masks and goggles. Also bootie covers (Jane, Manager).

Another home-visiting nurse said:

We use our gloves, mask if we have got a cold or if the client is really sick. Our PPE, our standard precautions that sort of things. If the clients are having
injections, they have sharps container in their homes so we don’t transport any 
wound care products or any sharps or anything like that (Nora, Enrolled Nurse).

The above mentioned information revealed that infection control in CBHVN in 
this organisation depended mainly on implementing basic infection control practices,
which were introduced to the staff through the infection control training. The next 
section describes the structure and processes used to implement infection control in 
CBHVN in one CBHVN branch of this organisation according to the six identified 
infection control elements.

**Element 1: Governance of infection control**

A review of documents showed that there was a manual for infection control in 
this organisation. The infection control manual was developed by the organisation’s 
management to ensure the health and safety of staff and clients (policy document 
11_infection control manual). The manual was designed “to provide the staff with clear 
guidance on the [organisation’s] infection control approaches and information on what 
they need to know and do about various elements of infection control” (policy 
document 11_infection control manual).

Reviewing the manual indicated that the components of infection control for this 
organisation were as follows: the chain of infection, standards precautions, additional 
precautions, outbreak management, and specialised infection control processes, staff 
health, training, monitoring and review (Policy Document 11_infection control 
manual). Some of these elements included sub-elements. The content of the manual is 
explicated in Table 4.
### Table 4 - Infection control manual

<table>
<thead>
<tr>
<th>Infection control element</th>
<th>Sub-elements</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Chain of infection control</td>
<td>None</td>
</tr>
</tbody>
</table>
| 2. Standard precautions   | a) Hand hygiene  
                          | b) Personal protective equipment (PPE)  
                          | c) The aseptic technique  
                          | d) Sharps management  
                          | e) Waste management  
                          | f) Equipment use  
                          | g) Spills management  
                          | h) Cleaning  
                          | i) Laundry  |
| 3. Additional precautions | a) Contact precautions  
                          | b) Droplet precautions  
                          | c) Airborne precautions  |
| 4. Outbreak management    | a) Notifiable disease  
                          | b) Pandemic planning  
                          | c) The business continuity  |
| 5. Specialised infection control processes | a) Food safety  
                          | b) Pets  |
| 6. Staff health           | a) Immunisation  
                          | b) Exposure and prevention  
                          | c) Staff illness and leave  |
| 7. Training               | None                                               |
| 8. Monitoring and review  | None                                               |

This manual was developed in a manner that provides the staff with two main components: firstly, information about an element and secondly, information on what to do about that element and links that direct the reader to read more information about the process of that element. According to the manager, because these documents were developed by a person who no longer works with the organisation and due to copyright issues, most of those links outlined in the manual have been disabled. She stated, “When I click on the infection control guidelines, nothing comes up” (Jane, Manager).

According to the participants, this manual predominantly focused on aged-care facilities and only a few of the elements are applicable to CBHVN services. The manager stated, “We don’t have a lot available. We do have documents, available but they are [aged-care] residential focused not [CBHVN] focused” (Jane, Manager). The elements that were applicable to home-care services included basic infection control as stated by one of the home-visiting nurses. “Pretty much, there is basic infection control. They have sort of been modified a little for community, but its more hospital or residential facilities. They probably need to be reviewed and have community-specific policies” (Ann, Registered Nurse). When the manager was asked how she decides on what to implement in home-care services from this manual, she replied:

It is what we were advised to use from our head of home care. As a manager, if I find any information that is relevant even from a residential context that can be
implemented into our [CBHVN] situations, but that is me choosing it…I think it is really driven by the manager at site on what to use and what is not…it depends on what we are exposed to and what our knowledge base is to know where to go and what to do. (Jane, Manager).

The manager stated that she also applied policies under the safety component of the policies:

If I go to the safety component, it is within our work health and safety policy. There is a component in there around the infection control. It is not an outline infection control, but it does talk about utilising universal precautions and our responsibility to keep ourselves safe and protecting clients. That is what I follow here at this site (Jane, Manager).

The above mentioned information showed that infection control was implemented by applying standard precautions and hand hygiene in the client’s home. The next section presents the structure and processes of the line of responsibility and accountability for infection control in this organisation.

The line of accountability and responsibility

It was stated in the infection control manual that, “It is the responsibility of the [organisation’s] management to ensure that all the requirements outlined in this [manual] are implemented. Also, it was the responsibility of [staff] to adopt requirements outlined in this manual to assist in preventing and minimising infection risks (Policy document 11_infection control manual). The home-care services were managed by the head of home care. The organisation operates several CBHVN branches. Each CBHVN branch was managed by its own manager. The branch manager was responsible for the work in each branch, including infection control:

I am responsible for all staff here. Any knowledge gaps, performance issues etc. that is my responsibility. If I am having trouble managing any of that, that is when I go to my business partner in there. Whether it is from an HR point of view or a clinical point of view where I need some clinician to come and assist. Sometimes information is best delivered not from the manager at site, but from other people (Jane, Manager).

To summarise, in this CBHVN branch, the infection control responsibility was integrated within the branch manager’s duty. The branch manager brought up any issues with the head of home-care services who, in turn, sought the advice from the proper designated person in the head office management and then sent back reports to the
branch manager via email. The process of consultation about infection control is discussed next.

**Consultation strategies**

The head of home-care services was the person to contact for any clinical issues or enquiries about home-care services, including infection control. The branch manager submits a designated form that goes to the Quality Control Department within the organisation, which will then be passed on to the appropriate person or head of that department to solve the issue or provide advice on it. The process of consultation was explained by the manager as follows:

> We do have [form]. So if we identified that we have a gap between our service delivery or training, we submit a corporate improvement form and that goes to the Quality Control [Department] within our corporate office and then delegated over to the appropriate head of that department (Jane, Manager).

The branch manager was asked about the consultation process of any infection control issue raised by the staff and she said:

> So if there is a concern raised...I encouraged them to fill out the appropriate documentation and go through to the right meeting that we conduct... and also a hazard form if there it is hazard...and it goes to our safety improvement team and then we discuss it (Jane, Manager).

The feedback on that issue was usually disseminated to the manager of each branch via email. Then, the manager of each branch has to communicate this information to their staff. The manager gave an example:

> The sharps management was raised with the head of home-care services and then the appropriate sort of information or data collection from different sites is gathered so we can see what the common practice is. Then they can move forward and implement a new guideline on what their expectation is from a corporate point of view. That is usually disseminated, when they make their decisions, through the email system, through training...to ensure that we do follow the practice (Jane, Manager).

When the home-visiting nurses were asked who they would refer to if they required advice on infection control processes, one participant commented, “I think I probably speak to the manager... I know that I can speak to anyone in here and if they did not know then I would go further up” (Karen, Registered Nurse).

During the individual interviews, participants suggested that employing a designated person for infection control would be very beneficial for providing advice and would be resourceful for infection control issues that require more expertise such as
the surveillance of infection. As the community context is different, employing a person who is more CBHVN-focused would be of benefit because they would understand the difference in the context and would be able to modify policies to make them more pertinent to the CBHVN context. The manager commented:

It is just an area that is hard to find what would be the best way to monitor it without making a home a clinical setting….because we are not really here to control what happens in that home. We are here to make sure we don’t have an impact on that person’s health when we are going to the home. So it is about safety and prevention before we walk in the home. If we can educate them and try to influence their practice within the home, then we have had a little win (Jane, Manager).

She further added:

I am thinking that we would employ the expertise of…hospital-based infection control…It would be tapping into our community resources to help us manage it a lot better from a community point of view, tracking and trending, monitoring data, collecting it. Someone with a home-care focus who understands that people are in their home…someone who can educate staff about making sure that hand washing is the most basic and simple form of infection control that they adhere to the most; it is not always about the gloves… [hospital-based infection control expertise] definitely have a spot-on home care in providing suggestions and ideas around good practice, right through to sharps management and how we store wound consumables through to actually delivery of care (Jane, Manager).

One of the participants also commented that assigning a nurse for infection control in home-care services as a resource for the staff would be helpful:

I think it would be good to have an infection control nurse…I guess that would be the one resource that you would go to the most if you are unsure of who you go to and if you had any questions about anything. I think they can provide you with the competencies and things like that as well instead of leaving it to [the] manager (Karen, Registered Nurse).

Another participant also commented that infection control could be integrated in the role of one home-visiting nurse who undergoes regular training in infection control. She specifically said:

It is probably good to have one of us who has regular training, regular contact with other organisations and what their practices are just so you keep on the top of things….probably we don’t a need full-time representative, but it is just something sort of to be implemented into one of our current roles…Probably one representative per site. Because we do have a representative for manual handling and all those sorts of things, but nothing for infection control…So, just nice and simple — pop it in one of our current roles and they receive extra training (Ann, Registered Nurse).
Another home-visiting nurse, who had a totally different point of view, commented:

Infection control as a whole is important so I think that you don’t really need one person dedicated to it; it is a team approach I think. As long as you are consistent and you are keeping up-to-date with your best practice, then it’s definitely manageable. It just should be an expectation that we should know. And if our workplace health and safety have new information, it is conveyed through various other meetings so we kept up-to-date with things (Nora, Enrolled Nurse).

The above mentioned information showed that staff sought advice from their colleagues and asked the manager for advice if the issue was beyond their expertise. The manager in turn tried to manage the issue with her own expertise, and she sought advice from the head of home-care or other appropriate sources if the issue required more specialised expertise. Participants suggested employing a designated person for infection control to look after infection control matters and provide consultation and assistance to the staff. The process of monitoring and evaluating infection control in this branch is discussed next.

*The monitoring and evaluation of infection control*

Participants reported that infection control in home-care services was monitored and evaluated through three main strategies: monitoring the staff performance, annual infection control training and hand hygiene competencies and clients’ feedback. Each of these strategies is explained in more detail by the manager:

[We do] annual mandatory training so they are competent for their hand washing. And there is a series of questions that go with it, so we know that they get the theory component and then the practical component. And also through the support day, the visits that we do with staff which are conducted each six months...and through the feedback form from clients (Jane, Manager).

Infection control training and the hand hygiene competency were provided to the newly employed staff in the orientation program and it was repeated annually. The competency test was performed at the CBHVN branch. Infection control training was undertaken by a registered nurse and the competencies report was reported back to the head office. As stated by the manager “We have got the annually provided, mandatory training so we do have a schedule for staff so that they are not missed and [we send] the compliance report…[to] ….our corporate team to see”. The content of the infection control training program and the process of hand hygiene assessment were described in detail in the education element.
Staff performance support days were conducted to monitor the staff performance in clinical practices and compliance with infection control practices. The staff were required to have a support day every six months. On the support day visits, the clinical nurses usually go with the personal-care workers to assess their practices and the manager does the support visits for the registered and enrolled nurses. The manager stated:

How do we ensure that they are utilising the [infection control] equipment that we provide them? We do support day visits with our staff. The requirement is every six months…and that is where our clinician…will go out and work alongside the staff members with a series of different so we can see them performing different tasks within different clients’ homes in different settings, so we can make sure that everything is being followed. We have a tick sheet that we need to tick off to ensure that they are following the standards (Jane, Manager).

The process of a support day visit was provided by the manager as follows:

The clinician is providing the support visit to the care workers, who has the Certificate III level of training. I monitor the clinicians. We do the support visit checklist by watching their current practice…so we go out and we monitor…we are looking to see if people are wearing excessive jewellery on the support days and in the competency…It covers documentation and the infection control component, [to ensure] they are following the guidelines, they are hand washing, they are following the correct food safety guidelines, they wearing their gloves appropriately, they are disposing equipment appropriately (Jane, Manager).

The process of how staff performance was used to evaluate infection control was explained by the manager:

[Infections] get reported to me so I monitor that. So if there are any concerns or issues, I am usually alerted to it…so I can see if it fits in [the education plan]. Is it a performance issue? Is it an ongoing performance issue? Depending on whether it’s around infection control, it could be around their understanding or reading of the care plan that they are following (Jane, Manager).

She further explained:

That sits in the staff member’s file and…it is managed at the site level. It’s not managed from a corporate level… It is a supportive tool, but it is also a good tool to identify knowledge deficits and it is standard within the organisation (Jane, Manager).

Client feedback was another method used to evaluate staff compliance with infection control practices, as the manager explained:

We advise clients about the expectations of our staff during the admission process. So then they are aware; it breaks down that barrier when people are wearing gloves when providing care, so they do not get that feeling. They feel
bad. The feedback I was given is that clients can be a little bit upset if they see us wearing gloves because they get the impression that they might have a contagious disease...So we need to reassure the client that this is a protective measure put in place to keep them safe. So you will see our staff wearing gloves and we use them for every service delivery type that we do. So they are then aware and if the staff member does not follow that standard, the client can report through that the staff member does not wear gloves, so we have had that feedback. So that is one safeguard (Jane, Manager).

The manager informed the researcher that client feedback was not always reliable:

You could say clients’ feedback, but that is not going to be your 100% reliable source because clients can be quiet partial too and be very fond of the staff member going in regardless of whether they might be following a good infection control practice or not. So it might not be a good reliable data (Jane, Manager).

The above mentioned information shows that infection control in this organisation was monitored through the support days, the outcomes of which are reported to the branch manager. The branch manager was responsible for identifying gaps in the staff knowledge with regard to infection control to improve the staff compliance and ensure their compliance with infection control practices. The clients’ feedback also assisted in a manner that allows the managers to follow up with the staff utilisation of infection control equipment. The hand hygiene competency was the only thing that was reported and followed by the organisation and it was usually done at the site, not at the clients’ homes and generally, all the staff pass the competency. The communication process with regard to infection control issues is discussed next.

The reporting and feedback mechanism

The reporting and feedback processes in this organisation depended on the regular staff meetings. The manager stated that there were five different staff meetings conducted monthly, including the safety improvement team and quality improvement meetings. She stated:

So we have a clinical [meeting] so that is for our clinicians, that is RNs and ENs and we have [another meeting which include clinicians and] our care workers who are out on the road. We have our team which is the whole office and that includes administration staff and other coordinators and non-clinical. [We have also] a safety improvements team, so we discuss the hazards and incidents and our quality improvement so that is bundled together for the management report. So we have five meetings per month for this site... The safety team meeting is where we have the representation from each discipline. So we have someone from clinical, admin, management, care worker and safety (Jane, Manager).
To summarise this element, infection control depended on implementing basic infection control practices. The branch manager was responsible for ensuring that the staff implemented infection control practices in their client’s home. Staff compliance with infection control was monitored through three methods. The feedback and reporting mechanisms in this organisation exist through emails and regular staff meetings. The infection control policies and processes for client care applied by this organisation are discussed next.

Element 2: Infection control policies and procedures for client care

The infection control policies which were applied to CBHVN included standard precautions such as hand hygiene, the use of personal protective equipment, the aseptic technique, sharps management, spill and waste management and staff immunisation. The process of each of those policies will be explained next.

*Hand hygiene*

Brief information on how hand hygiene is necessary for preventing transmission of infection was provided to the staff. The link to infection control training material was provided and promoting hand-hygiene practices among the staff was emphasised (policy document 11_infection control manual). The training material was prepared by the organisation’s management (education document 4_hand washing). More detailed information about hand hygiene education is provided in the education element of this case.

*Personal protective equipment (PPE)*

Brief information on the type of PPE is provided in the *infection control manual* with a link to PPE guidelines (policy document 11_PPE). The manual also states that to “ensure staff are given the PPE guidelines and ensure the availability of PPE all the time. Refer to relevant safer work procedures to identify the correct PPE required” (policy document 11_PPE). The type of PPE provided by the organisation was mentioned by one of the participants. “Goggles, gloves, apron, booties, hand sanitiser as well. We have got sterile gloves as well so depending on what procedure we are doing if we actually need sterile gloves” (Ann, Registered Nurse).
The aseptic technique

The policy of aseptic technique emphasised on performing aseptic technique whenever “invasive procedures” are performed (policy document 11_aseptic technique). The infection control manual directed the reader to review safe work procedures related to clinical producers to ensure appropriate aseptic techniques are followed. It also emphasised that the staff have access and training in the use of safe work processes and integrated aseptic techniques (policy document 11_aseptic technique).

Sharps management

The definition of sharps was provided in the infection control manual, “The organisation’s sharps management approach supports the use of single use sterile equipment to minimise cross infection” (policy document 11_sharps management). Reporting any sharps injury incident was emphasised. Links to related documents such as documents on the disposal of sharps, the safe work process of handling sharps and handling sharps risk assessment were also provided in the infection control manual. Access to these related links has been disabled so the manager was asked for clarification on what sharps management policies were followed in the home-care services. She replied, “Within the organisation, from my understanding, we are not to be transporting sharps at any points. It’s the client’s responsibility” (Jane, Manager). With regard to the process of sharps disposal in CBHVN services, she explained:

In regards to sharps, with our clients that we do medication assistance with that require injections, we purchase the sharps receptacle for them and it stays in their home…so everybody has access...[we have clients who are]... paying us a fee…for doing injections service, we would recommend them to go to the appropriate health clinics where they can purchase them...and when [the sharps container] is at its limit…we seal it up and we get the client to dispose of it, whether through their pharmacy, the doctor’s surgery, or we have, I know, locally with our council a sharps management bin within town that anyone is welcome to put their sharps in. We do not carry sharps (Jane, Manager).

One of the home-visiting nurses was asked how she disposes of sharps when the clients do not have a sharps container. She replied:

The only incident that we have been caught out, is there was an emergency where we had to go out and give an injection…so what I do is ask them to have a little glass screw lid container something we can keep it in. The client themselves will dispose of that. We do not carry used needles or stitch cutters in our car or in our bags (Ann, Registered Nurse).
The manager was asked what the process was if the client was unable to transport the sharps to the appropriate place. She commented:

I know that we are looking for implementing some sort of strategy to assist them because what if the client is not mobile and can’t get out of their home, who is going to get rid of the sharps?...I know that they are looking at maybe that we can link them with our residential facilities, because they do have large contract in place for sharps management and disposal for those who come and collect the sharps and take them away. But I have not heard back from them...So there is still an area there that requires some work, but we do not transport sharps at this site. Other sites may transport them; I cannot tell you (Jane, Manager).

The above mentioned information showed that the sharps management process for clients who were known to use sharps in home-care services was to dispose of them in a sharps container in the client’s home. There were some situations when sharps management policies were not suitable for the CBHVN context, especially when using “one-off sharps”. How such situations should be dealt with in the future still requires more clarification and policies, as reported by the participants.

**Waste management**

Information on the types of waste was provided in the infection control manual (policy document 11_waste management). The reader was also directed to read the *Waste Management Manual* to dispose of waste accordingly. The researcher was not authorised to access the *Waste Management Manual*. Therefore, clarification on the clinical waste management process in CBHVN was explored with the participants. The manager explained the process of waste disposal at the client’s home as follows:

Clinical waste, like dressing products, are put in a bag, tied up, and put in the general waste of the client’s home. We usually pop it in the bin on our way out. We don’t leave it in their house because it is never a good idea to leave it in there (Jane, Manager).

The same response was received from the other home-visiting nurses. Clinical waste was disposed of in the normal bin at the client’s house after it was doubled-bagged, if required.

**Spills management**

The infection control manual provided information on the processes to clean up and deal with spills. Three basic principles of managing spills were: use appropriate PPE, clear spills before cleaning the area, and avoid generating any aerosols from the
spill material (Policy document 11_spill management). The instructions direct the readers to familiarise themselves with the Cleaning hazardous spills risk assessment and safe work procedure, apart from understanding the Process of managing cytotoxic spills risk assessment and safe work procedure (Policy document 11_spill management).

**Staff health**

The staff health section of the manual provided recommended immunisation for the staff to protect them against common vaccine-preventable diseases such as Measles, Rubella and Mumps, Hepatitis A and B, Chicken Pox, Influenza, Pertussis, and Tetanus. The organisation also provides the influenza vaccination to all the staff annually for free (policy document 11_staff health).

**Monitoring and review**

The instructions provided in the infection control manual indicated that the manual was reviewed and updated annually through the document management processes of the organisation. One participant commented, “Yeah all the policies and procedures are always taken to meetings and updated” (Nora, Enrolled Nurse). The manager also commented on the policy review process by saying:

> On our home page we do have a button. Here, are all the recently updated documents. So when you go up there, there is a massive list. All these are being updated and these are when they are last reviewed so you can see there is a way. And we raise this every meeting, what’s new. So I can share with the team this document is now is being updated and make sure that old ones are removed (Jane, Manager).

One participant commented on how she was informed about the updated policies, “We would get a message. They send anything to the manager, usually, and she filters them to us. So we know any updates, any best practice, and any changes” (Nora, Enrolled Nurse).

**Specimen collection and transportation**

Information on specimen collection and transportation was not provided in the Infection Control Manual. However, some participants stated that they sometimes collected swabs and urine specimens from the CBHVN clients and transport them to a pathology or a GP clinic. Therefore, the participants were asked to provide clarification on the process of specimen collection and transportation. One of the home-visiting nurses stated:
We can take swabs if we were out there and we ring the doctor from the home perhaps he will say can you just take a swab and send that off, so we can do that. We do have the swabs in the dressing boxes and then the doctor will fax off the form to which ever pathology he is with. We will drop the swab off. We keep it a plastic bag like the pathology people carry (Nora, Enrolled Nurse).

With regard to urine specimen collection, the same participant reported, “If the doctor orders it... usually the doctor will send them out with the client, you know the little urine jars, and then we can help with that” (Nora, Enrolled Nurse). For the transportation of urine samples, the participant stated, “It depends on the client. If the client cannot do it or if the family can’t do it, we can drop them in. We put that in a sealed plastic bag” (Nora, Enrolled Nurse). During specimen transportation, the participant stated, “We would finish with that client and we would get rid of it straight away so it is not sitting in the car for any length of time” (Nora, Enrolled Nurse).

Similarly, another participant said that they do collect wound swabs and urine specimens:

Yeah we do. We have got all the equipment here in the office. We would not keep it with us so if we know that one of the wounds are bit infected, generally we will come back and grab some, because it gets pretty hot in the car... I will drop it to pathology immediately after I finish (Ann, Registered Nurse).

The abovementioned information showed that the organisation do provide the required equipment for swab and urine collection and transportation.

**Client education**

Participants reported that home-visiting nurses work with their clients for only limited hours per week and the rest of the time, those clients either depend on their carers or themselves. Therefore, educating clients is essential to assist them to take care of themselves when the home-visiting nurse is not around. It helps them to be more independent. One participant commented:

Nurses are here to advocate and to promote independence...It is not about doing it for them; it is about teaching them and getting them to do it; it makes them richer. What is that old saying? “Teach a man to fish, and you feed them for life” it is no different with our clients (Jane, Manager).

Another participant said:

I think it is important as well so they can keep the wound clean and not infected. It’s a good idea to educate the client and the client’s family as well so they are able to sort perform tasks as well (Karen, Registered Nurse).
One participant said that educating clients is required because sometimes, the clients just don’t have enough information and educating them may help them to understand the risk and comply with infection control practices. She said:

Because sometimes they just don’t realise. If they are dragging their wounded foot on the ground and it’s leaking what effects can happen to them, to us, or potentially the next person that we go to. So just education, more than anything. It helps because sometimes they just don’t know (Nora, Enrolled Nurse).

When home-visiting nurses were asked about the educational topics discussed with their clients, one stated:

It might be around their hygiene practices, especially with people who have some chronic wounds who might get in the shower and gets their dressing wet. Educating them around how quickly they can get infection if we are not going to do a dressing (from visit A to visit B). What they do to care for that and how they look after the dressing products that left in their home. For example, do not leave them in sun, where to store them, how to maintain them...You would be surprised with what they do with them when we are not there (Jane, Manager).

The delivery methods of the education also affect how the clients may respond.

It is important that home-visiting nurses provide their comments in a polite and non-judgmental fashion so that the clients cooperate. For example, explaining that they are doing something to improve the healing process of the wound or to make sure that the clients do not get any infection. One participant said, “You always make it about the client and then they are much happier to work with you” (Ann, Registered Nurse).

According to the participants, most CBHV clients respond positively to the advice and education provided, as mentioned by one participant, “You know once you explain things to clients, they are pretty open to it” (Nora, Enrolled Nurse). Another participant commented, “We always explain to our clients the importance of the infection control and they are very open to it because they want to get better. So they don’t resist or anything; they are very open to our advice” (Ann, Registered Nurse). She further commented, “Generally, if it is something that will keep them out of the hospital or something that would keep them at home, they will help and they will work with you. They want to stay home”. However, sometimes clients’ responses may take time as she commented, “99% of the time they will work with you...They will be a bit resistant at first, but generally just consistency and persistence will get them on board. Sometimes it just takes a bit longer”. One participant provided an example of how client education assisted in better outcomes as follows:

We had a gentleman, he had a severe wound, which was just leaking fluid all the time and he would just happily let it leak. He did have it covered to a point, but we were sort of educating him on better wound care products, better
management and we did not get it healed before he went into care. But we reduced the amount that leaked and he did not feel as embarrassed to have people over and he started going out a little bit more. He decided to go to residential care so I don’t know if it healed or if it did not, but it did improve during that time (Nora, Enrolled Nurse).

Another provided an example of client cooperation as follows:

We have a gentlemen and he hoards basically. And we discussed with him that it’s not ideal for our staff to enter, and that we need to make it a bit more hygienic. What he has done is he cleared a path and that path gets cleaned. We go into his bedroom and into the bathroom so he will be cleaning the sink for us and he does use disinfectant and cleaning products; he does not just wipe it down with a cloth. He provides us with sanitisers plus also antibacterial soap so we sort of work with that. Obviously, we are not going to change their house entirely but we work with them and explain to them that it is important for us to (Ann, Registered Nurse).

As reported by the participants, client education is one of the essential elements, especially in CBHVN. Client education helps to promote clients’ independence and increase client compliance. This will eventually lead to better client outcomes and assist home-visiting nurses in their duty.

To summarise this element, the infection control policies for client care included implementing hand hygiene and standard precautions. Sharps were disposed of in a special sharps container at the client’s home and the client was responsible for eradicating that container when it is full. Participants were not allowed to transport sharps in their vehicle. Some participants stated that they sometimes do collect swabs and urine specimens from the CBHVN clients and transport them to a pathology or a GP clinic. Participants also emphasised the role of client education in implementing infection control practices at clients’ homes. The next discussed element is staff development and education on infection control.

Element 3: Staff development and education

Staff development and education was one of the main elements used in this organisation to promote and evaluate infection control practices in CBHVN. Infection control was embedded in the organisation’s mandatory training. Infection control training was given to newly employed staff as a part of their orientation program and then it was repeated annually. Staff development and training included the following processes: the orientation programs, education calendars, safety meetings and other
educational resources. More detailed information about each one is provided in the next section.

The orientation program

Mandatory training on infection control via hand hygiene was provided to all the staff annually (policy document 11_ training). According to the Infection Control Manual, “All staff should [receive infection control training on hand hygiene] to ensure that they are using the most up-to-date techniques in hand hygiene” (policy document 11_ training). The manager stated, “We do have a part of our mandatory training where we do provide the infection control training. We do hand washing competencies” (Jane, Manager).

The manager said that the infection control training included a lecture provided by the organisation and included hand-hygiene competency. The lecture was given to the staff by a registered nurse on the site. The manager stated, “A registered nurse comes in and do the infection control class. So one of the registered nurses must do it... there are four of us here at the moment, we alternate” (Jane, Manager). The hand hygiene competency education was also done for the staff by one of the registered nurses. Reviewing the infection control lecture showed that it was mainly about hand hygiene. The topics included in the lecture were: the importance of hand washing, the definition of infection, alcohol-based hand rub and hand hygiene/hand rub techniques. The manager described the infection control training as follows:

We go through the basic information. We do our hand-washing competencies and we get them to answer a series of questions to see if they have retained the theory component. [Then] they do the practical; we utilise the verify solution and the nice UV light, so it can actually point out to make them more conscious and aware [about washing their] hands properly (Jane, Manager).

According to one home-visiting nurse, the infection control training included, “theory-based resources plus a DVD and the person who is doing the orientation would just go through with... [new staff] and have a chat” (Ann, Registered Nurse). She described the contents of the training as follows, “[It is a] little book [included] in your basic PPE, hand washing and the food safety handling and the chemical safety [then] a sheet of questions that you need to answer afterwards”. Another home-visiting nurse stated that she did go through the hand hygiene practice test in the orientation period. She said, “When I started here with hand hygiene, I did do like a little test, a competency I guess”
(Karen, Registered Nurse). With regard to hand hygiene competency, one of the participants described it as follows, “There is a little bit of a theory part and then we actually have to do a physical hand washing here on the site” (Nora, Enrolled Nurse). The manager mentioned that in order for the staff to pass the infection control training and be certified competent, they have to:

Answer those questions. They have to get like 10 out of 10 to be considered compliant and that is with their practical assessment. They must be able to recall and talk through the process and demonstrate it as per the assessment guideline (Jane, Manager).

The manager also reported that during the orientation, the new staff also receive a workplace health and safety induction in which they are given a “general overview of expectations from the organisation [to ensure] that best practice is utilised for the safety of both staff member [and client]” (Jane, Manager). She further stated, “When a new employee comes on board, they are taken through those policies” (Jane, Manager). This is assessed during the orientation period by a registered nurse who accompanies the new staff to assess their clinical practices and to ensure that they follow the organisation’s guidelines. One home-visiting nurse described the processes of clinical practice assessment as follows:

[At employment] any staff member...would have one of the senior registered nurses out there just observing their technique [to see] if it is in line with our company’s policies. If not then [they] providing feedback, getting them on track working [to the company’s policies] (Ann, Registered Nurse).

Another home-visiting nurse explained it as follows:

We do competencies to make sure that we are regard the actual change of the catheter...the aseptic technique is part of that competency. There used to be a checklist and am not sure if there still is now (Nora, Enrolled Nurse).

Participants stated that this clinical practice assessment was done to ensure that the newly employed staff are knowledgeable of the company’s policies and procedures and that they follow them while performing their clinical practice tasks to ensure their competencies. One participant mentioned, “Generally, it is just that first time out making sure you follow the company’s policies and procedures...but it’s not annually” (Ann, Registered Nurse). Another one commented, “It goes into our personal file that we have done that competency” (Nora, Enrolled Nurse). She further commented:

Every year we do our hand-washing competency, but [not the clinical practice assessment] because it is just common sense. Unless there is a change then they
would provide some education but…It’s just an expectation that our infection control be up to scratch.

The above mentioned information indicated that infection control training included a theory part where the staff were provided with basic information about infection control practices. This was followed by a paper-based test given to them to confirm that they understand the theory part. Then a lecture focused on hand-hygiene practices was provided to the staff. After that, the staff perform a hand-hygiene practical test to ensure that they are competent. Finally, a clinical assessment was given to the newly employed staff to ensure their competencies with regard to the clinical practices. The hand-hygiene training and competency education took place annually while the clinical practice assessment was done only once at the time of employment.

**The education calendar**

A structure of the education program was provided to the researcher and it included mandatory and other optional training. The manager explained it as follows:

The education calendar is [planned] at the site level because every site will have different issues. This is a standard month’s training. At the minimum, we should be providing training at least every month to our staff on a hot topic” (Jane, Manager).

The education calendar was prepared by a learning and development officer who was allocated to the site. The manager provided an explanation on the process of developing the education calendar as follows:

[The learning and development officer] sits with me towards the ends of the year and we go through performance evaluations and people raise whatever idea they want, things that they want to achieve [in] the next 12 months. We collate that information and try to implement it through our education calendar, plus mandatory training is implemented in there too. That is how we develop the education calendar (Jane, Manager).

With regard to how the topics were chosen, the manager explained, “We have a standard calendar up of what we do per month. But [we also teach] whatever we find, maybe a hot topic or clients that are coming in and might be new so more education is added to our agenda” (Jane, Manager). She further added, “So any practice changes are raised through a meeting…if I noticed some issues that are coming back from our feedback management, then we would raise them and put training in place”. The manager further clarified:
So we usually have a topic that we raise each month…we implement training each month and we focus on a particular topic, like dementia week…safety week. That is how we focus it. We usually get the team to pick because they have got to coordinate what they want and we find guest speakers because we don’t always have all the knowledge so we usually find the expert to get them to provide the training (Jane, Manager).

Participants reported that the education calendar was actually an education plan for the whole year. The topics were spread over different weeks. In between those weeks, the manager could arrange for extra educational sessions if the nurses requested them, or if a new issue emerged.

*Safety meetings*

Another way this organisation chooses education topics pertaining to infection control is through a safety meeting. The manager explained it as follows:

We do [have a] safety meeting…and that is where we get our workplace health and safety team to develop some of the key hot topics or issues that we are finding at site. So they will research it and get the items put on one page and the whole idea of the safety meeting is [to] generate a discussion among the care group to get them thinking about what is good practice, what are we currently doing, what we need to change, that sort of thing. So that is the whole idea of the safety meeting to raise awareness (Jane, Manager).

The manager provided an example of infection control topics chosen at safety meetings as follows:

I know that last year we did some outbreak management training. Staff raised concerns through a meeting about swine flu and what if they were exposed to it — ‘We have families’, ‘What about us?’ So we utilised our DVDs and we did small-group training (Jane, Manager).

The manager stated that she also provided informal education when she goes with the staff to clinical practices, “We do raise awareness through practicals and working alongside with them” (Jane, Manager).

Safety meetings were used as a method to increase staff awareness of different safety topics and to brainstorm ideas on how to deal with an issue on the best-practice approach. Informal education was provided by the manager on some occasions.
This organisation also supported and provided external education to the staff according to their needs and requirements. The manager provided an example as follows:

At this site we utilise our new clients [to determine staff education topics]. We have got a lot of clients who have Multiple Sclerosis at the moment, so we are getting speakers in to provide education. We get pharmaceutical companies to come out and talk to us about pain management. Depending on what the topics are and what we are dealing with in our clients at that point of time, it is how we direct our further education (Jane, Manager).

One participant reported that company representatives come to give education sessions. She said, “If there is equipment and we don’t know about it, we would request our manager to arrange the company to come out” (Ann, Registered Nurse). Another participant provided an example of one training topic related to infection control as follows:

One of our clients had a special pump that we had to give him his medication via, so we had training on that. So it just depends on our needs. Sometimes we choose the topics and sometimes it is just provided to us (Nora, Enrolled Nurse).

Another way to determine education topics was to call other sites and try to get some of their experiences. As one of the participants stated:

If there is a new client that has come on board with a condition or a wound or something that none of us have ever seen before, we would call around the other sites and we might need some extra training as well from other sites so we support each other (Ann, Registered Nurse).

Participants were also sent for conferences and training courses, as one home-visiting nurse stated, “I have done some wound training. I went…last year for three days to a conference on wound care. I have been to another couple of wound-care courses —just half days or a day (Ann, Registered Nurse). The manager also stated that the clinical development officer also helps in education when some of the staff require assistance for their clinical practices. She said, “If we have concerns about someone’s clinical practice, we will call our clinical development officer, so if we need someone…[to] assist us in supporting a clinician…So they can provide that support and training for them” (Jane, Manager). External resources included inviting company representatives to provide the staff with educational sessions, according to the staff needs. Staff were also sent to conferences and credited training courses related to their areas of interest.
To summarise this element, infection control education was provided in this organisation through the mandatory infection control training, through the safety week as a part of the calendar education programs and through a safety meeting where the topics were chosen based on the issues emerged from the safety meetings and management feedback. Informal education was sometimes provided by the manager. The organisation also supported external education by sending their staff to conferences and training courses and by inviting appropriate representatives to provide education as per the staff needs. The next element discussed is staff health and safety.

**Element 4: Staff health and safety**

The *Infection Control Manual* states that this organisation was committed to maintaining the health of their staff (policy document 11_Staff health). The staff health section in the *Infection Control Manual* included three main topics: immunisation, exposure and prevention and staff illness and leave. All the topics are explained next.

**Immunisation**

This section of the staff health policy outlined the recommended immunisation for the staff to protect them against common vaccine-preventable diseases (document policy 11_staff health). The organisation also provided the influenza vaccinations free for vaccination to all the staff annually for free and encouraged the staff to have it (document policy 11_staff health). Staff were not required to provide any vaccination certificate or medical physical examination when they were initially employed. The manager commented:

> It’s really an honesty system. We do pre-employment physical examination, but that is purely looking at their physical capability to do the job. The questionnaire they complete does ask if they have any health issues or any infection control issues. It’s an honesty system. If they didn’t write it down, we are not going to know. We don’t even keep a record of who has had their vaccination and who has not. No we don’t (Jane, Manager).

One home-visiting nurse, when asked if she was required to do a medical physical examination, replied, “No x-ray, no bloods, nothing like that. Just more of a physical so my physical limitation at work, my strength, little exercises. So I had to go to physio, there was no general practitioner” (Ann, Registered Nurse).

**Exposure and prevention**
The exposure and prevention part of the *Infection Control Manual* provided the staff with instructions on appropriate PPE for the performed task to minimise the risk of transmission of infection. The manual also stipulated that the staff were to attend the annual mandatory hand-hygiene training and encouraged them to maintain their vaccination status against vaccine-preventable infectious diseases (policy document 11_exposure and prevention). The management process of sharps injuries or exposure to infectious disease was explained by the manager as follows:

It gets reported through a staff injury form and as it is reported they have to go to a doctor. We have to get permission from the client to see if they are going to have any blood tests done, which they can decline. But then the staff will go through that testing and I believe the company provides and covers the financial side of that to ensure that they are okay. I put [their] action on there and follow up on what [they] have done to manage it…we do [follow them up] from the psychological point of view as well so they are offering the employee assistance and any counselling if they need it or anything like that. And then [we put staff] through a training component to see whether there’s any gap within their performance or technique etc. so it’s sort of mind, body, plus their performance. So it sort of covers all different areas (Jane, Manager).

She further explained the process of monitoring the incident report as follows:

Incidence forms are completed, handed through, registered, and they go to the appropriate coordinator looking after the client to investigate and it is all reported back to me. So that is through our continuous quality and improvement [process] so we can monitor and report that way. [Quality management team] provide advice and there is a section on the form where they can provide feedback to us on what to do. The form is designed so that we get to the background scenario. We provide the information in there and what action we have already taken. So then they are not repeating any actions. It has to be forwarded through to all relevant managers. So we have regional manager. They have to read through and sign it and it goes through to the executive manager and head of home care.

One of the home-visiting nurses described the process of managing exposures and injuries as follows:

I would report it to the office to the manager and then I would have to go and get the consent of the client to have a blood test done. And then we probably both go and get tested to make sure that everything is okay (Karen, Registered Nurse).

*Staff illness and leave*

It was stated in the staff health policy that the staff were to be isolated or granted sick leave in the event of an outbreak (policy document 11_staff illness and leave). The *Infection Control Manual* also instructed the staff to obtain more information on leave
in the employee leave management guideline. One home-visiting nurse reported that in
the case of sickness, the staff must notify their managers of their sickness to obtain sick
leave:

If you are not well, it’s a good idea to remove yourself from the home as well
because out in the community it’s not sort of contained like a hospital
environment. We are going to go from client to client and other staff are going
as well. So it’s not only our clients that we can infect, they could then infect
other staff. So letting people know if you are not well, asking other one of the
nurses if they could go do the visit (Ann, Registered Nurse).

To summarise, this element recommended immunisation and free influenza
vaccines for the staff. In the case of exposure to infectious materials or needlestick
injury, the manager reported that she was responsible for attending to the process. Staff
were encouraged to take sick leave whenever they don’t feel well. The next element
discussed is the surveillance system to monitor infections.

**Element 5: The surveillance system**

The analysis of the documents showed that the organisation did not have a
monthly infection control register for infection surveillance processes in the community.
When the branch manager was asked if they have a surveillance system for CBHVN,
she replied “No” (Jane, Manager). She further clarified:

We do have documents [monthly infection register] available, but they are
[aged-care] residential-focused not home-care focused. We do have the client
incident form where we can identify if there is any skin irritation or rashes or if
there is been an infection. But we don’t have the appropriate tracking and
trending tools to monitor that...we don’t report it to the organisation; just to the
team involved with that client’s care.

She further explained:

We document in their [clients’] file if there is been any record or any
exceptional reporting; that is what we do. So any changes, we do have our
wound care treatment records where if they had one infection, we can identify
that on there and what is has been treated with. Do we fill out an infection form
and monitor and track and trend that way? No, not at this site.

When she was asked how they assess and monitor infections in CBHVN, she
stated, “Do we trend it? You [could] probably say unofficially”. She further explained it
with an example as follows:

We might pick up a reoccurring habit like with the gentlemen who I was
talking about his catheter. Each month we go out and do our review. Through
those reviews we identify that there is a reoccurrence because when he would get
an infection, it would affect his mobility, and he would end up with a hospital admission. So we have got another hospital admission, something is not right. So it is monitored. Let’s dig a little bit deeper... and we start identifying and pulling in other care workers involved in the care to a case conference to look for what is happening at each service to find what their [point of view] is. That is where it was identified that the catheter is being disconnected and if we were not switched on to notice that there is an infection every month, the conversation would never had happen. So, unofficially, we are tracking it. Are we trending it and saying ok we noticed that we implemented some training for the client education and some education for staff and we now have no infections? It is documented in the client’s file, but not in a system anywhere for the company to recognise it. So unofficially.

The manager also mentioned that there is cooperation between the general practitioners and the home-visiting nurses when it comes to infection assessment and monitoring.

She stated:

The doctor plays a major role in the care that we provide; they are part of that link… We might be able to swab the [wound and send the] result through, but then it is up to the doctor to chase them up and follow them up (Jane, Manager).

Participants reported that the GP was the person to contact when the client acquires an infection. One of them said, “We are going out regularly doing dressings and we just liaise with the doctor. If that means calling an ambulance and sending them to hospital if they are unwell, then we do that” (Nora, Enrolled Nurse). Another nurse said, “We can actually already initiate taking a swab, getting in touch with the general practitioner. Letting the GP know that, ‘Look, I think that this wound is infected’, so we can already organise an appointment for the client” (Ann, Registered Nurse). Another participant also said:

I would probably dress it the best way I could and then get in contact with their GP and let the client know…and if it was terribly infected you might just suggest that they go to the hospital and get it looked at or they can go to their doctors as well. So, hopefully, the doctor will put them on antibiotics (Karen, Registered Nurse).

With regard to documenting and following up with the swab results, one of the participants mentioned that it was the responsibility of the client to get their results and report them back to the home-visiting nurse. She stated:

The client is in charge of their own health. So, if a swab or something comes back, we can’t ring in and get the result. It has to be the client. So we will ring the client and ask, ‘Have you got the result back from the swab yet?’ Or sometimes the doctor will call us (Nora, Enrolled Nurse Registered Nurse).

The above mentioned information indicated that infections were tracked and detected unofficially. Infections were documented only in the client’s progress notes and
reported back to the team involved in client care only. There was no official surveillance system in CBHVN to collect, monitor or trend infections. The GP of the client is the point of call for any advice or consultation about the infection status of a client. The last element is the environmental context, which is discussed next.

Element 6: The environmental context

Participants reported that there were some environmental issues that affect the implementation of infection control practices in the community context. In this organisation, the issues included: the control over the home environment, storing dressing materials, pets and unavailability of hand-washing facilities. Each issue is discussed in more detail next.

Participants reported that the control over the home environment was one of the most difficult challenges for the home-visiting nurses. The clients’ level of hygiene, behaviours and concept of cleanliness at their homes were factors that also affected the home-visiting nurses’ ability to control the work environment around them. The clients’ cooperation and storage of products were also important factors that affect the provision of a better work environment to the home-visiting nurses and better quality care. The clients live in different homes and their environment varies according to their socioeconomic status. Not everyone was able to afford a house and some people may live in a caravan or are homeless. It essentially depended on what the clients can afford. Not every client had the ability to provide an ideal and clean environment that was suitable for providing care within. One home-visiting nurse gave an example of how bad the condition of client’s environment could be:

We had a gentlemen who did not really have a complete house. He had no…external walls. And the plumbing, I don’t know [if] it worked in the bathroom but in the kitchen I am not touching that sink. There was spider webs everywhere and wasp nests and mice pellets everywhere (Ann, Registered Nurse).

One home-visiting nurse commented that the level of hygiene of the work environment in the community context is a very important factor for providing better care. However, the hygiene standards in some clients’ environments were unstable. Hygiene standards differ according to the clients’ concept about hygiene and what they accept as being clean. She said, “Not every home is as cleans as the next” (Nora, Enrolled Nurse). She further explained:
The cleanliness of everybody’s home, their expectations, what they use in their own home I guess that some of the homes [have] clutter, that sort of thing. You know you can’t always provide the best care that you would always like to in a clean environment (Nora, Enrolled Nurse).

Similarly, another participant also commented, “Depends on which client you go I guess. Some of them are quite tidy and some of them are quite messy” (Karen, Registered Nurse). Another participant stated, “Obviously we don’t have that sterile environment like the hospital” (Ann, Registered Nurse). Thus, the clients’ hygiene levels play an important part in the quality of service provided to the clients. If the environment was more hygienic, it was much easier for the home-visiting nurses to provide better quality care.

Participants reported that the clients’ behaviour may sometimes adversely affect the home-visiting nurses’ ability to control the environment while providing care for them. Some people may live in a manner that they think is fine to live in. Other people may think it is fine to have a particular type of behaviour without considering that this behaviour may put them at the risk of infections. This may make the work of the home-visiting nurses more challenging. One of the participants provided an example as follows, “We have some clients collect a lot of stuff and they are quite messy, and they have got boxes full of stuff everywhere. But you sort of got to learn to put up with it” (Karen, Registered Nurse). Another nurse said, “You know, some people are just happy to take off a band aid and put it on a kitchen sink” (Nora, Enrolled Nurse). She further provided an example of how the clients’ behaviours may affect the work environment as follows:

A client comes to my mind. He hoards everywhere through his house. And we sort of have to work around him, obviously. You don’t set down [on the floor]… [you use]…your PPE, your gloves, standard precautions.

Working in the clients’ homes was one of the factors that affected the control of environment in delivering home care. The client’s home environment was generally uncontrollable because the nurse was only a guest who visits the client for a few hours to provide healthcare service and then leaves. Therefore, the home-visiting nurses cannot impose a practice in a client’s home if the client did not agree with it. One participant commented:

In the community it is especially hard [to control the work environment] because of people cleanliness, what they will accept. And they are in their home, so they have the right to live the way the want to live. But it is just sometimes hard for us. Some people are willing to adapt; some people say, ‘I live this way if you don’t like it lump it’ (Nora, Enrolled Nurse).
The clients’ cooperation was necessary for treatment plans to succeed. It also helps the clients to achieve better outcomes. One participant said:

I just know that within the community we can follow all the training that we have been provided, the standards that are in place. We can follow them, but at the end of the day when you have a compliant client it works, but if you’ve got a non-compliant client, it does not matter what we do, what we track, what we trend. We will never have any say in matter because it is their home. So that is probably the bit that always gets me and I don’t know how to work past that because it is their home. It’s like if I come to provide some care and I say you need to stop doing that. You would probably tell me to leave pretty soon (Jane, Manager).

She further explained:

If they continue to want to fiddle with their wounds or stick their fingers in it or whatever they doing, we really cannot stop it…We can try and influence the client; however, it is the client’s choice to live a lifestyle they want (Jane, Manager).

Participants reported that storing products such as wound dressing products was also one of the challenges. The products must be stored in a protective container in a place that is away from sunlight, dust and pets to protect the products from being contaminated and to prevent infection.

Pets were also a challenge because there were clients who have pets in their houses, which may put the client at risk if the procedures were undertaken in such an environment, especially if the client was surrounded by the pet fur or hair. This might put clients at risk especially, if they did not take care of their wounds properly. One participant stated:

With your wound care products, some of the homes are a bit dusty, [have] pets …so [you must ensure they are] storing products [properly] to make sure that they are still clean to use on the clients. You know clients have their cats, dogs and other visitors visiting and getting all that dirt and grime and fur into wounds if they are not well already (Ann, Registered Nurse).

Another home-visiting nurse reported some strategies to overcome some of the above mentioned challenges. One participant commented, “There is ways you can work around things. You have to think smart, I guess, out in the community. You learn to adapt; you learn to do some of things that I had to come up with out there” (Ann, Registered Nurse). A participant provided examples of how she maintained a clean or sterile environment in the clients’ homes as follows:

I would probably try and use the same spot every time and, if I had to, I would just give it a clean down first. If every time you go there and it is sort of
cluttered and looks dirty, you would probably just explain to the client that is where you want to do it and to try to keep it clean during the week until we come back next time. But, yeah, it’s hard sometimes to do because it is their environment and they have got to do what they want. If they need a hand, we can always say to them do you mind if I just go and get a cloth and wipe down (Karen, Registered Nurse).

Another one said:

If the table was not ideal...You can talk to people and you can say I want to clean your table and say it nicely. If you can see all those food scraps and they obviously have been there for a week on the table, you could say, ‘Look, I am going to do the dressing here because you don’t want it down on the floor. Do you have any products, any disinfectant can I just wipe that over before I put this down, because it needs to be cleaned to ensure that you don’t get any infection (Ann, Registered Nurse).

One participant provided an example of how to clean equipment at the client’s environment as follows:

Say that you don’t have your scissors and you have got the client’s and they are old sewing scissors and you need to cut, obviously you going to go and wash them. Give them a good wash, then use your alcohol wipes over them and you only use that part of the scissor you know is all clean (Ann, Registered Nurse).

On how to deal with a less than ideal environment, one participant stated, “For the sink, use some paper towel or something to touch the tap itself. Wash your hands with water and get another paper towel to turn the tap off. Make sure you don’t touch the sink itself” (Ann, RN). For maintaining a sterile field in a client’s home, all of the participants agreed that they use the sterile dressing packs as their sterile field. One participant said:

We order sterile dressings...The sterile field is that dressing pack you get and just keep your sterile field that way. You can also put things like blueies underneath or something to keep the area clean. We can order the blueies through a company and they deliver them to the house (Karen, Registered Nurse).

Another participant explained her way of managing a sterile environment in the client’s home as follows:

On your actual wound tray, you have got your sterile filed so you fold out the bit of plastic that’s there so you are making sure nothing gets on that, making sure all your products stay on there. Obviously in the centre; you are not going around the edges or anything. You’ve got also the little towel inside so if it’s their hand that you are dressing, put it under their hand before you put that on the table and they put their hand on that (Ann, Registered Nurse).

On storing products in a client’s home, one participant stated:

The best way is in a plastic container that you can actually close and keep it stored nice and tight, so you only open it when you visit. If not, you know the
big snap-up bags, so we use those as well if they don’t have the plastic
containers. We have got snap-up bags ourselves and we would use them if the
client can’t provide a plastic container. We usually then keep it close by so
either in the bedroom or in a cupboard somewhere. In the bathroom is always
one of their favourite places. Just wherever the client want or requests...just
explain to them it’s probably the best to put them out of the away of the people,
out of the way from the pets and all the dirt and grime (Ann, Registered Nurse).

Participants reported that while working in clients’ homes, it is important to keep in
mind that every individual is different and the level of cleanliness is also different. The
participants tried their best to deal with all types of clients and strove to be innovative
with what each client can provide.

The unavailability of hand washing equipment was one of the factors that
influenced the performance of proper infection control practices in the CBHVN context.
Essential infection control equipment, such as alcohol-based hand rubs and PPE was
always provided by the organisation; however, there were times when the home-visiting
nurses faced challenges with regard to other equipment such as hand-washing
facilitates. Hand-washing facilities were not always available in the clients’ homes or
sometimes they were available, but were not appropriate for use. One of the participants
clarified this by saying:

Not having a sink or taps or soaps on hand and is not the most ideal
environment. You know, some clients their bathrooms just grimy and
dirty...That is sort of the biggest challenge, so just making sure that you have
got the right equipment (Ann, Registered Nurse).

Another participant also commented:

There has been one client...he did not have adequate [equipment]. He had a sink
to wash your hands, but he did not have towels because he did not do really do a
lot of washing. I mean it was not the ideal home environment and that is my
perception and the staff’s. We take our own paper towel for those
situations...This gentlemen was in an environment that probably he did not have
much control over it. He did not have family to support him (Jane, Manager).

One participant stated that performing clinical practices such as hand hygiene can be
hard if the client did not have the proper equipment. She said:

It’s harder to manage I find. Because you do have to go into the home and you
to use their facilities in there. So you have got to make sure that they always
have like the right hand soap and clean towels and all that sort of things. It’s
harder to manage than in the hospital because you have got everything in there
and it is done. While in the home you have got to organise it, but it is important
to have it but it is just different approaches, I suppose (Karen, Registered
Nurse).
Another participant stated:

Most of them when they know what we need, they will go and purchase it specifically for us. Probably 75% have the right equipment in their home. Most of our clients are now providing us with paper towel. Once you explain that hands towels are not really the hygienic option, they will get the paper towel (Ann, Registered Nurse).

Participants reported that hand-hygiene equipment was available in most clients’ homes; however, there were still a few clients who could not afford them. Hand-hygiene facilities were sometimes not appropriate for use. Participants reported using alcohol-based hand rubs, especially when hand-hygiene facilities were not available or not suitable for use. The manager stated that the staff were advised not to use any public toilets to wash their hands and the office provided proper hand-washing facilities and equipment so they can come back to the site anytime when they feel that they need to wash their hands. She said:

We do not access public toilets or anything like that to go and do our hand washing because they are not very favourable or even shopping centre etc. But there are external facilities and staff are welcome any time to come here and we do get staff popping in here. So they are welcome to come here anytime to pop in and utilise the facilities that they need to (Jane, Manager).

When the participants were asked how they dealt with the clients who did not have proper hand-washing facilities, one replied, “We just take a bottle of hand rub in case you don’t have anywhere to wash your hands. You can always resort to that, which is the next best thing I guess if not better sometimes” (Karen, Registered Nurse).

Another participant commented:

Washing hands at a client’s home sometimes is not ideal because homes are not always the cleanest. But, you know, carrying around sanitiser as well and popping off to get lunch or something, you know you always make sure you go in and wash your hands even if you don’t need to use the toilet. So it is important because you don’t want to spread [infections] from home to home (Ann, Registered Nurse).

One participant mentioned that the unavailability of water was one of the issues that she experienced in the community context. She said,

I don’t know because even with the sanitiser you still need water. I don’t know if someone could make a little filter taps or something that we can carry in our car with us so that we can wash our hands. So yeah you still need water that is the only thing. The only problem I come across is water (Ann, Registered Nurse).

Participants reported that providing home care in the client’s environment requires preparation and environment assessment. Assessing a client’s environment in advance
was important so that the home-visiting nurses can be aware of what facilities are available in the client’s home. They may also advise the clients on what the requirements are and prepare the equipment accordingly. One participant said:

In the home, you don’t have everything and you need to get on you, so unless you are actually carrying these things physically with you, it's hard to have like hand rub and a clean towel and all that on hand and gloves. So, you should make sure you are prepared before you go to anyone’s home I guess. It is really difficult to try and manage sometimes. You just try your best (Karen, Registered Nurse).

She further commented on how to overcome such challenges as follows:

We have always to get things on hand, so you have to organise having your gloves…and then…making sure that they have got the facilities to actually do hand washing…having clean towel or paper towel at least, because a lot of the time they don’t (Karen, Registered Nurse).

Participants reported that the assessment of a client’s environment may help the home-visiting nurses to be ready for whatever circumstances those clients live in. Daily assessment and the preparation of extra equipment are among the things that the home-visiting nurses require to consider, especially because they usually work alone and away from any immediate resources or help.

The case summary

There was an Infection Control Manual that provides the policies and procedures to the staff. The manual included information on specific aspects of infection control, including hand hygiene, standard precautions, additional precautions, outbreak management, staff health, training and monitoring and review. The manual focused on aged-care facilities settings more than home-care services. It was the responsibility of the branch manager to decide on what to choose from this manual to apply to the CBHV context. Infection control in CBHV depended on implementing basic infection control practices in clients’ homes.

The responsibility for infection control was incorporated into the role of branch manager. The branch manager was responsible for identifying gaps in staff knowledge with regard to infection control to improve staff compliance and ensure their compliance with infection control practices. The clients’ feedback was used to follow up with the staff utilisation of infection control equipment. The hand-hygiene competency was the only thing that was reported and followed by the head office.
Staff were recommended to be immunised against common infectious diseases. Influenza vaccination was provided for free to all the staff annually. Staff were encouraged to take sick leave whenever they don’t feel well. In the case of exposure to infectious materials or needlestick injury, the manager was to be informed as she was responsible for attending to the process.

Infections were unofficially monitored and tracked in CBHVN. The infections were documented only in the client’s progress notes and reported back to the team involved in client care only. There was no official surveillance system in CBHVN to collect, monitor or analyse infections. The general practitioner of a client was the point of call for any advice or consultation about the infection status of the client.

Speaking of the environmental context, the issues reported by the participants regarding the implementation of infection control in the community context in this organisation included the unavailability of hand washing facilities and the lack of control over the client’s home environment.
Case Report IV

The description of the case

Organisation (D) is a not-for-profit organisation that provides residential aged care, community care and retirement living and operates more than 260 centres across Queensland and Northern New South Wales. The professional staff in this organisation assist those in need to design personal services to suit each individual’s requirements. The organisation employs around 8,734 staff specialised in different areas such as nurses, personal carers, physiotherapists, occupational therapists, speech pathologists, podiatrists, dieticians and social workers. The organisation offers 4,563 beds in their residential aged-care facilities and 1107 units in a retirement-living village. The organisation runs a number of therapy and respite centres. The home-care services that they provide include allied health services, nursing care, pain management, continence care, diabetic management, personal care, domestic assistance, wound management, stoma care, social support and many other services that are tailored to the clients’ needs. These services are available to older people; people with a disability; patients discharged from hospital or those who are following up a visit to their general practitioner; and individuals and carers who are in need of support and education. The healthcare service is offered to people in their homes, in the community, and in the organisation’s centres, clinics, residential aged-care facilities and retirement living villages. More than 13,000 people are assisted every day to improve their quality of life and maintain their independence. The organisation has around 1,493 Community Aged Care Packages and 409 Extended Aged Care at Home Packages. A brief overview of the infection control structures, processes and mechanism of outcome evaluation in one CBHVN branch of this organisation is provided next. The findings are now presented according to the six identified infection control elements.

An overview of infection control in this organisation

Infection control in CBHVN in this organisation depended on adhering to the Infection Control Manual which was developed by the management of this organisation to provide their staff with the guidelines and information about infection control principles and practice that reflect current recommendations. The manual aimed to assist the staff in complying with consistent, best-practice policies and processes to minimise the risk of infection transmission and to assist the staff to provide high-quality
health care while maintaining a safe environment. More detailed information about
the Infection Control Manual is provided later. There was also a designated person for
infection control in each cluster or service of this organisation. This person was
responsible for representing their cluster, managing infection control matters in their
cluster and providing consultations to the staff when required. The infection control
representatives from all the clusters were members of the infection control committee.
This committee was headed by a designated person from the head office. The
committee met every three months to discuss infection control matters of all the services
and to keep up with communication between the clusters and the head office
management with regard to infection control issues. More detailed information about
the structure and processes used to implement infection control in CBHVN in one
branch of this organisation according to the six identified infection control elements is
provided next.

Element 1: Governance of the infection control program

The analysis of data showed that this organisation was committed to ensuring
the health and safety of their clients by “providing a safe and healthy working
environment for all staff [through] adopting an infection control position that minimises
the risk of [their staff and clients] acquiring healthcare associated infection” (policy
document13_principle of infection control). The staff had a “law [requirement] to take
responsibility to safeguard clients, themselves and general public form infection”
(policy document13_principle of infection control). Infection control principles in this
organisation included: quality improving, consumer and staff incident reporting, risk
management, surveillance, infection control representation, and education and training
(policy document13_principle of infection control). Each of these principles will be
explained in more detail later in the corresponding element. As infection control
depended mainly on implementing the Infection Control Manual, the next section
provides detailed information on the development of this manual.

The Infection Control Manual was developed to “provide information about
infection control principles and practice that reflect current recommendations from
relevant state, national and international sources” (policy document 13_purpose). The
primary objective of developing this manual was “to assist staff in complying with
consistent, best-practice policies and processes to minimise the risk of infection
transmission, and to assist staff to provide high quality consumer care while
maintaining a safe environment” (policy document 13_purpose). The Infection Control
Manual was based on “the adoption of standard precautions, which is the assumption that all blood and body fluids are potentially infectious” (policy document 13_purpose). The aim of the manual was to “establish an organisationally accepted minimum standard for infection control, provide consistent infection control management, meet professional standards, comply with legal standard and best practice and ensure continues improvement in infection control management” (policy document 13_purpose).

The Infection Control Manual has been developed in consultation with the staff from the organisation’s Infection Control network. This network was chaired by the corporate policy and evaluation team policy officers and comprises expert member from all disciplines and levels across the head office and the residential and community services. It provided expert advice and feedback on the content of the Infection Control Manual and complies with and was based on information within Queensland Health’s Infection Control Guidelines, NSW Health’s Infection Control Policy, the NHMRC’s Australian Guidelines for the Prevention and Control of Infection In Healthcare, relevant Australian standards and state and Commonwealth legislation (policy document 13_purpose). One manager participant explained that this manual was the main source for them. She said:

We have a manual and that is really our main source. We have a hard copy here and everybody in the centre knows where that is…It is always accessible and it is in an area down here on the shelf, where everybody knows that they can come to this. And, as you can see, it’s all of a set out very simple terms and that it is also in the internet. So pretty much everyone has access to the internet and the policies and procedures on the internet. And it is a little bit difficult to get around if you don’t know what are you doing sometimes, but it is there and accessible. I guess that is why we have hard copy so people can come [and consult it] (Glene, Manager).

When she was asked how often the policies are reviewed and updated, she mentioned:

At the [Infection Control Committee] meeting. They are four times a year. At the major meetings, [all infection control representatives] will generally be asked if there is anything in there is not current. And, along the way, if [they] find something really that is a problem or concern or if the evidence is not supporting what they are doing in there. [They] generally could send them an email prior to the meeting taking place and they will put it on the agenda, and then generally it will get discussed on that level at the infection control meeting (Glene, Manager).
The process of updating policies was further explained as follows:

It would go to the committee and then from that point whoever is chairing the committee would take it back, [to] discuss it with the relevant people who might be involved in making decisions around that. It might be that they want to go and do some research and bring that back to the committee. Or it might be the committee members might be nominated to go and research on that and maybe bring it back at the next meeting…Then the minutes of the meeting [are sent to us] and major things will be put out. So things like sharp management, mask testing, or factsheets come out from that meeting and we disseminate that down here (Glene, Manager).

The above mentioned information showed that the Infection Control Manual was the main source of infection control policies and procedures for the staff in this organisation. The manual was developed by a panel of experts and it was reviewed whenever the infection control committee members raised any concerns about the current policies. The issues were discussed at their meetings and decisions were made by the relevant authorities. The next section presents the structure and processes of the line of responsibility and accountability of infection control in this organisation.

**The line of accountability and responsibility**

Reviewing the infection control documents showed that each service is encouraged to “designate an individual to have responsibility for infection control. The representative can be anyone who has received training in infection control” (policy document 13_infection control representation). The responsibilities of the designated infection control person included: (i) updating the staff on any amendment in the infection control manual; (ii) providing consultations to the staff with regard to work changes that may affect their health; (iii) assisting and monitoring the infection control practices and ensuring compliance with the Infection Control Manual; (iv) maintaining communication with the different levels of authorities within the service branch, (v) providing advice on infection control issues, ensuring that the local protocols are aligned with the Infection Control Manual; (vi) identifying infection control training needs in consultation with the staff; (vii) coordinating ongoing quality management monitoring activities; and (ix) undertaking incident investigation and providing recommendations for improving clients’ outcomes (policy document 13_infection control representation). The organisation encouraged implementing a multidisciplinary infection control committee to successfully implement the Infection Control Manual. This committee may be a part of another committee that has wider responsibilities such
as those of a quality committee. When a manager participant was asked about the line of authority of infection control in this organisation, she explained:

We have an infection control committee, which is at a higher level, and then we have what we call ‘representatives’ to sit on that committee, and we meet every three months. And all those representatives will attend that meeting and anything made at a strategic level basically gets passed down through those representatives and then back to the centres where [they] are working really… The committee members are generally representatives from all around different clusters. So they can be from up North Queensland, down in Brisbane, down south as well…[The committee members are from] different [specialties] but most of them are probably registered nurses. There is probably allied health as well in there. So it is a mix between allied health and registered nurses and there may even be, but I am not sure, personal carers in there, possibly as well. It’s really a representation of different clusters really in Queensland. [The committee is usually headed by] a support officer from the education department or from one of the head offices centrally. They generally chair those meetings and then they will disseminate all this information from there. We have a list, through the Infection Control Committee, we will have a list of those infection control representatives, so we can then liaise with people if we need to, in different clusters. We have minutes so the minutes will get disseminated back through the representatives and then really that filters down in our cluster (Glene, Manager).

The role of infection control representatives in this branch was explained by one manager as follows:

Most of [her] work is on the road. [She] doesn’t generally have [her] own client load, but [she] does a lot of joint visits with the primary registered nurses. So [she is] constantly reviewing wounds and giving advice on products and regimes and part of that role is also for [her] looking around [the staff] infection control habits out there. Sometimes [she] goes alone, say if we have high workloads and we need somebody to step in then [she] will do [her] own visits, but most of the time it is more of consultancy role. It’s about doing joint visits with the primary registered nurses (Glene, Manager).

The consultation process with regard to infection control in this branch was mainly for wound management, as explained by one participant as follows:

[The infection control representative] knows everyone that’s on the wound team and what dressings are there and at [staff] meetings every week we will discuss if we have got any problems. If they have got any issues, then we will discuss cases, manage those issues at the meeting, and then generally we will work out in advance for the next week who [the infection control representative is] going to be doing joint visit with for their patients. But that can be ad hoc as well. Like, say, for instance someone is out today and possibly has information about an infection and they want [infection control representative] to go and see them. So they will ring [infection control representative] and say, ‘Listen can you come out and do a joint visit’. So it is not always [planned], but it is both [planned] and ad hoc. [Infection control representative] doesn’t have a primary
load of clients because [she] needs to be free to be able to move. It is the same with palliative team and the support maintenance. If they do have wounds running across all three programs and they would ring in and say, ‘Listen can we do a joint visit, I want you to review this wound’ (Glene, Manager).

The role of infection control representatives in daily infection control activities in this branch was to communicate infection control information to the higher authority in the organisation and perform infection control audits as explained by one participant as follows:

I know that from a centre perspective, we continue, I guess, on a daily basis to inform the infection control resources if we need to. And just generally at this level we do an audit every six months as well, so we have an audit process we will go and do. And that gets fed back into that sort of central level at office and again the information that comes out of that once again gets disseminated at that Infection Control Committee level (Glene, Manager).

The above mentioned information showed that in each service, there was a designated person for infection control. Their role was to provide advice and consultation to the staff with regard to infection control matters. These representatives form an infection control committee that met every three months to discuss infection control issues and policy updates. The committee was headed by someone from the central head office. The information from this committee meeting was disseminated to the infection control representatives down to the local services and vice versa. The process of monitoring and evaluation of infection control is provided next.

The monitoring and evaluation of infection control

The analysis of documents showed that “Improving the quality of care and providing a safe working environment [are] fundamental activities for [this organisation’s] services. An effective infection control strategy for preventing the transmission of infections from person-to-person [is] central to these activities” (Policy document 13_quality). The first method to evaluate the effectiveness of the Infection Control Manual was by implementing the “auditing of infection control processes and practices” (Policy document 13_quality). Specific audit forms have been established for each service stream and “should be completed in line with the Audit Calendar contained in the Quality Improvement Manual (Community and Residential). These audits ensure that the infection control activities [are] implemented, reviewed and evaluated” (Policy document 13_quality).

The second method was incident reporting. “Once identified risks can be controlled and minimised and unsafe behaviours can be proactively influenced and
modified thereby reducing their impact on staff, consumers, visitors and others” (Policy document 13_incident reporting). Incident reporting included: client incidents and staff incidents. Clients’ incidents included: infections and outbreaks. Staff incidents included: workplace health and safety, near misses, and security damage incidents that affect the staff such as needlestick injuries, infection control breaches, and work-related illness (Policy document 13_incident reporting). To clarify these policies, one manager participant was asked about the process of evaluating infection control in CBHVN. She replied as follows:

We do our major assessment or auditing process...twice a year... pretty much it is about 10 to 15 people that [the infection control representative] does the audit on individually. So [she] will just randomly pick people and [she] will go through the [audit form] with them. Then, that report gets collated and sent to the head office to the quality management specialist…and from that point, the feedback, I don’t know where it goes. Through from the head office, but when we [send] out in these reports they would probably come back down to the service manager and if there was something specific that we had, then we would address that from the local level looking at the root cause analysis of why maybe that would have occurred (Glene, Manager).

To summarise, the infection control practice was evaluated twice a year through an audit conducted by the infection control representatives on a random number of the staff. The results were then collated and sent to the head office for analysis. The process of reporting and feedback is provided next.

The reporting and feedback mechanism

The communication process for reporting and feedback on infection control in this organisation existed through the regular staff meetings, as explained by one manger participant:

[We have monthly meetings] where that information would sort of get discussed...the clinical nurse meeting...Then we also have a monthly meeting with everybody and that is the personal carers, the registered nurses, the coordinators. That information, we disseminate in that meeting. So if something changes like hand-hygiene policies, then that would be put forward there so everybody had this information. So really it is about how that information gets communicated...If something that came through ad hoc, it could be on a daily basis where might get to put on people desks. But, generally, it will be disseminated through those meetings...If there was something relevant, like say testing masks, for instance, we may send a memo around...So, and usually the clinical nurse consultants there will give that information and also disseminate it at their weekly meetings. At that level, we also have weekly meetings with those
teams and then the information will also be transferred across those basically (Glene, Manager).

To summarise this element, the *Infection Control Manual* was the main source of infection control policies and procedures for the staff in this organisation. The manual was developed by a panel of experts and it was reviewed whenever the infection control committee members raised any concerns with regard to the current policies. The issues were discussed at their meetings and decisions were made by the relevant authorities. Each service had a designated person for infection control. Their role was to provide advice and consultation to the staff about infection control matters. Those representatives formed an infection control committee and met every three months to discuss infection control issues and policy updates. The committee was headed by someone from the central head office. The information from this committee meeting was disseminated to the infection control representatives down to the local services and vice versa. Infection control was evaluated twice a year through an audit, which was conducted by the infection control representatives on a random number of the staff. The results were then collated and sent to the head office for analysis. The communication strategies depended mainly on the meetings. There were three different regular meetings that occur within this branch. The information could also be disseminated through memos if it was an urgent matter. The next element discussed is infection control policies for client care.

**Element 2: Infection control policies and procedures for client care**

As mentioned previously, the organisation has developed the *Infection Control Manual* to provide all the salient information about the recommended infection control practices (policy document 13_Aim). The manual included information on basic infection control and prevention (standard and transmission-based precautions), staff and client health, cleaning equipment management and cleaning, the management of blood and body substances and the management of specific infectious diseases. The manual was developed for both the residential facilities and CBHVN. The policies and procedures that are related to CBHVN are explained in more detail in the next section.

*Standard and transmission-based precautions*

The document review showed that standard precautions should be applied “to all [clients] all the time regardless of their unknown or presumed infection status (Policy document 13_standard precautions). Standard precautions were supposed to be
implemented “all the time with particular attention to blood, all body fluids, non-intact skin, and mucous membrane” (policy document 13_standard precautions). Standard precautions included:

Good hand-hygiene practices, use of personal protective equipment, respiratory hygiene and hand etiquette, aseptic technique, safe use and disposal of sharps, routine environmental cleaning and spill management, appropriate handling of linens, waste management and reprocessing of any reusable equipment and instrument (policy document 13_standard precautions).

Transmission-based precautions should be applied “when particular [clients] are known or suspected to be infected or colonised with an infectious organism (policy document 13_transmission-based precautions). Instructions on how to apply transmission-based precautions according to the modes of transmission of the microorganism were provided in the manual. These precautions should be applied in consultation with the service manager or the infection control representative in the service. A summary table of standard and transmission-based precautions was also provided in the manual. Standard precautions related to CBHVN included information on hand hygiene, PPE, respiratory hygiene, cough etiquette and aseptic techniques. More detailed information on those practices is explained next.

Hand hygiene was considered to be “the single most important measures in preventing and controlling the spread of infection” (policy document 13_hand hygiene). A link to hand-hygiene guidelines was provided for more information on how and when to perform hand hygiene. Hand-hygiene guidelines included information on five moments of hand hygiene, examples of situations requiring hand hygiene, hand hygiene techniques, hand drying, glove use, safety facts about alcohol-based hand rubs, hand care, hand accessories and hand-hygiene education (policy document 14_hand hygiene guideline).

It was emphasised in the manual that the staff should use proper personal protective equipment. Personal protective equipment (PPE) was referred to as: “The required PPE depends on the nature of the task, types of body substance involved, risks, and equipment used” (policy document 14_PPE). Information on the type of PPE and when to wear each type and recommendations for use was provided. Recommendations for the sequence of donning, removing and discarding PPE were also provided.
Information on respiratory hygiene and cough etiquette was provided in the manual. It was mentioned in the manual that proper hygiene and cough etiquette may reduce the transmission of respiratory tract infections. All the staff with signs of respiratory infections should “cover their nose and mouth with tissue while sneezing, turn away from others when coughing or sneezing, dispose tissue immediately after use, and clean hands after coughing or sneezing” (policy document 14_cough etiquette).

It was mentioned in the manual that the aseptic technique should be applied by the staff. The aseptic non-touch technique was defined as “precaution designed to prevent undue contamination of person, object, or area by microorganism…Aseptic technique must be applied consistently and conscientiously” (policy document 14_aseptic technique). A description of standard and surgical aseptic techniques was provided in the manual. Examples of standard aseptic techniques included: wound dressing, changing the drainage device, IV therapy, peripheral line insertion, venepuncture, the removal of the central line and drain, and tracheostomy care. Examples of surgical aseptic techniques included: complex wound dressing, insertion of the central line, line management and intercostal catheter insertion. The second policy provided in the manual was staff health and client health, which is explained next.

Staff health and client health

Staff health plays a role in reducing the susceptibility of the staff acquiring infectious diseases. Staff health includes various measures to protect the staff from infections. More details on those measures will be provided later in the staff health element.

The manual outlined that in order for the clients to be healthy, they must be vaccinated against infectious diseases (policy document 13_ consumer health). The clients were encouraged to declare their infection status if they were a risk to others. Client health included: the identification of infection status, vaccination, TB screening, hand hygiene and client education. The identification of infection status was done by assessing risk factors for each client upon admission and by regularly updating information such as previous hospitalisations, past infections, vaccination history, skin integrity, bladder and bowel function and baseline x-ray (policy document 13_ consumer health). In addition, for occupational exposures and sharps injuries, the client has a “responsibility to provide information or consent for testing to enable management of injured or exposed staff” (policy document 13_ consumer health). The
clients should be referred for a pre-test and post-test by their GP to advise them of the required test and the consequences of each test (policy document 13_consumer health). The clients are also encouraged to receive the following vaccinations in consultation with their GPs: Hepatitis A, Hepatitis B, Pneumococcal, Tetanus and Diphtheria, and Influenza (policy document 13_consumer health). Each service should identify those clients who are at risk of TB in the admission process and they should consider the need for TB screening in consultation with the relevant public health authority (policy document 13_consumer health). The clients and their families should be encouraged to wash their hands and provided with appropriate means and information on hand hygiene (policy document 13_consumer health). It was outlined in the manual that the clients and their families should be familiarised with infection control strategies and be provided with posters, printed materials and educational videos to inform them about hand hygiene and the proper use of PPE (policy document 13_consumer health). Educating clients and their families may assist in preventing infection and reducing cross contamination.

**Environmental cleaning**

In the community setting, “the organisation offers basic cleaning only such as cleaning bathrooms, and vacuuming. Staff who undertake cleaning duties in [a client’s] home should refer to the client’s care plan for details on frequency and equipment used” (policy document 13_cleaning).

**Pets**

In this case, “pets are expected to be restrained” (policy document 13_pets). Pet care by staff may include feeding and the cleaning of water and food bowls only” (policy document 13_pets).

**Laundry and linen management**

While washing laundry at a client’s home, the staff should “apply standard precautions…and maintain hand hygiene. When washing is not identified as a required task, soiled linen are to be debulked, secured in a leak-proof bag and returned to the clients for cleaning” (policy document 13_laundry).
**Waste management**

Information on waste management strategies was provided in the manual. For example, it was mentioned in the guidelines that:

Any waste that must be transported from the home by staff requires safe transport in a labelled, rigid, upright container and should be removed for disposal each day to the collection point of the service. It is safest to transport it in the boot of the vehicle (policy document 15_waste management).

The guidelines provided the characteristic of the plastic bags. The plastic bag should be “of adequate quality to ensure that they don’t split or tear or burst during handling, conforming to the colour coding, filled to not more than two-thirds of their capacity” (policy document 15_waste equipment). When a participant was asked how to dispose of clinical waste at a client’s home, she answered, “[clinical waste] just tied up in the bag and still put into the normal waste. In the community, we do not know any other way” (Glene, Manager).

**Sharps management**

The policies indicated that all the staff should be educated on the safe handling, use and disposal of sharps in the community (policy document 13_sharps management). Sharps containers should be “puncture resistant, waterproof and leak proof, have a wide enough opening to allow sharps to be dropped into the container by a single hand, clearly labelled…with the bio-hazard symbol printed on the container, and never be overfilled” (policy document 15_waste equipment). In a community setting, the minimum standard for disposing sharps was “in a rigid-walled, puncture-resistant container that is sealed and securely closed. The container can be then disposed of in the general waste stream or preferably in a community sharps disposal facility, depending on the local council’s guidelines” (policy document 13_sharps management). Some of the locations where a sharps container could be disposed of were provided in the *Infection Control Manual* such as the local pharmacy, a public disposal bin, a public hospital, and via the needle and syringe program and the residential collection service. This policy was only applied to containers holding up to ten (1 ml) syringes and needles (policy document 13_sharps management). When one participant was asked about sharps management and disposal in the community, she replied:

Generally, if we know that they are on a medication, we will take our own sharps container, or else according to the local policies of the council, sometimes they can use their own jars and then get disseminated into the general rubbish waste. Always, we have policies on no recapping and things like that for
In order to minimise the risk of injury associated with waste management and handling, the sharps management education was included in the infection control training, which was conducted within the orientation program (policy document 15_waste management). More information on infection control training and education will be provided later in the education element.

**Spill management**

The basic principle of managing and cleaning spills of blood and body substances was provided in the manual. The instructions were as follows:

…to deal with the spill immediately, minimise traffic around the area as much as possible, clearing up the spill before the area is cleaned, avoid generation of aerosols, avoid using hands directly if the waste contain sharps, [and] report the incident to the appropriate authority (policy document 13_spill management).

Information on the contents of spill kits and the equipment used for cleaning spills was provided in the *Infection Control Manual*. Instructions on how to clean spills according to the size of the spill was also provided. When a participant was asked about the spill kit management, she replied “Everyone carries the spill kits in their car for infection control purposes…the spill kit will stay in the back of everybody’s cars. Everyone has one of these spill kits should they required” (Glene, Manager).

**Equipment management and cleaning**

Strategies with regard to equipment management and cleaning processes in the community setting were provided in the *Infection Control Manual*. For example, it is mentioned that:

All medical devices and instruments should be stored in a dry area out of reach of children and pets and away from the high-traffic areas of the home. All parts
of any equipment should be dismantled, where possible, to allow physical removal of all particulate and biological matter. Items should be cleaned with detergent and water and dried thoroughly before they are transported into or out of the home. Upon return to the service and depending on the items classification, items should be cleaned and reprocessed as per the key steps to reprocessing section (policy document 13_equipment management).

When a participant was asked about the cleaning management process for equipment in community, she replied:

No we don’t use anything [that requires cleaning or sterilisation in community]. I don’t think that we use anything that is reusable. Once the (single use) dressing packs are out, we don’t remove them from the client’s house unless they have not been opened. If it was someone who had a quite a number of products that were expensive, I guess if they did not want them and they had not been opened, we will bring them back and share around. Generally, nothing comes back to the office at all, so we don’t have any sterilising procedures here (Glene, Manager).

The management of blood and body substances

Instructions on specimen collection and transportation were provided in the Infection Control Manual as follows: All the staff should be aware of and be educated on the collection and handling of specimens and “Clients who are required to obtain their own specimen are to be given a full explanation of the process and rational” (policy document 13_management of specimen). “All specimens must be placed in a leak-proof container or bag provided by pathology services, and correctly sealed” (policy document 13_management of specimen). The person who obtains the specimen must ensure that the specimen is collected in a safe manner, correctly contained and labelled, placed in a leak-proof container (policy document 13_management of specimen). The services should determine who is responsible for transferring the specimens to the pathology services. Delivery arrangements may be organised in some services (policy document 13_management of specimen). Detailed information on what is required to collect specimens, including instructions on specimen collection and on the storage and transportation of specimens was provided in the manual. The specimens can be transported using three main methods: the clients take their specimens to the laboratory, the specimens are collected by a pathology courier, or the staff take them to the laboratory or the collecting agent (policy document 13_management of specimen). If the staff are going to transport the specimens, then the specimens must be “separated from the driver’s compartment, bagged and contained in secure leak-proof bag, properly restrained to prevent movement, with a spill kit available in the vehicle, and the specimens not left in the direct light” (policy document 13_management of specimen).
When one participant was asked about the process of specimen collection and transportation, she explained:

If we collected a swab sample, it should be immediately…after that visit is being completed, you try and take that through to the GP at that point of time. Sometime, there can be a delay, but as far as my research tells me from the swab that we use, it can be out for 24-hours for processing. We don’t really have a specific container for [swab specimen]…but certainly we don’t want it left in the car to blow in heat…so we try to drop it off directly after the visit has been made. Generally, they won’t be left in the car for a long period. Maybe half an hour after the visit has finished it should be dropped to the GP’s surgery (Glene, Manager).

Another strategy used was calling private medical services, as one participant mentioned:

We do have an on-call system that in the evening the client can call this service and the doctor can come out to them in the evening. Sometimes, if it is a late visit and the nurses are going for a wound care and the wound has some cellulitis and they want to get a swab, but we don’t have time to do it, they will ring [private medical services] and ask them to go there at night. And the GP will go out and they will take the swab and send it off. So that is sort of our back-up if we need to. We would just refer them to [private medical services] and they will come out in the evening. They run all night. Likewise with central venous lines (Glene, Manager).

The management of specific infectious diseases

Instructions on the process of notifying infectious diseases to the state health department were provided in the infection control manual. The process was as follows: “Infectious disease notification should be directed to the relevant state health department, and should be initiated within 24 hours of diagnosis by a medical practitioner” (policy document 13_notification mechanism). In the “Infection Control Manual”, precautions for preventing the transmission of specific infectious diseases such as Cellulitis, Conjunctivitis, Mumps, Influenza, Meningitis Chicken Pox and Shingles and other different types of infectious disease (policy document 13_maangement of infectious diseases) were provided. The manual also included guidance on how to deal with pandemic influenza situations (policy document 13_pandemic influenza).

To summarise, the Infection Control Manual was the main source of infection control policies and procedures in this organisation. The manual provided the staff with
guidelines for several infection control practices. The next element discussed is infection control education.

**Element 3: Staff development and education**

Infection control education and staff development included formal and informal education. The formal education involved lectures, self-learning packages and hand-hygiene training. The informal education was provided when the infection control representative accompanies home-visiting nurses on joint visits. Both types of education are explained in more detail next.

*Formal (mandatory) education*

Within this case, formal education involved lectures, self-learning packages and practical training. According to one manager participant, the lecture was “already done. The [lecture] is formulated from head office and education department” (Glene, Manager). Reviewing the documents showed that the lecture covered the following topics: the importance of infection control, who is responsible, the common types of infection in a community setting, the mode of transmission, chain of infection, surveillance, standard precautions, transmission-based precautions, hand hygiene, five moments of hand hygiene, hand-hygiene techniques, when to wash hands, hand care, respiratory hygiene and cough etiquette, PPE, linen management, cleaning, waste management, sharps handling and disposal, spills management, managing exposure, staff personal hygiene, gloves usage, brief instructions on a pandemic situation, and cytotoxic medication (education document 6_infection control lecture). This lecture was given by the infection control representative to all the staff working with client care, as stated by one of the participants, “Usually it would be the [infection control representative] that would do that education at this [branch]” (Glene, Manager).

The self-learning package aimed to “provide important information to all staff relating to infection control, including management of outbreak and infectious disease, [and to] ensure that staff work within the parameters of the organisation’s infection control manual and maintain safe working environment to staff and clients” (education document 7_self-learning package). The package was part of the mandatory infection control training. It consists of two parts: theory and assessment. The first part included the following main topics: the mode of transmission of infection, quality management, surveillance, standard precautions, transmission-based precautions, hand hygiene, respiratory hygiene and cough etiquette, PPE, laundry, cleaning, waste management,
sharps management, spills management, managing exposure to blood and body fluids, and personal hygiene. After the staff finish reading the theory part of the education, they complete the assessment, which consists of twenty questions related to the topics in the theory part. The assessment was then given to the infection control representative for correction, as one participant stated, “Usually it would be the [infection control representative] that would do the workbooks. [She] marks them and then that will go into their files every year as well, to say that they have actually done the mandatory training” (Glene, Manager).

During the orientation program, the staff were provided with hand-hygiene education, which included theoretical information on hand hygiene. The services were encouraged to use the ultraviolet light and glow lotion to assist in hand hygiene education. Then the staff should undertake the hand-hygiene checklist to gain competency in hand hygiene. The checklist included the steps of hand-hygiene techniques. Upon completion, the checklist was then sent to the service manager to be filed in the staff personal file (policy document 14_ hand hygiene education). The process of hand-hygiene competency was explained by one participant as follows:

The hand-hygiene training was done in the facility, not in the patient’s house…when we have done the education…everybody will do it in the bathroom here with the hand glow lotion on and we will go and assess what their technique is in the bathroom here…and they all will have tick and flick competency. Everyone has to do that one annually, but that is done here in the centre (Glene, Manager).

One participant reported that the mandatory infection control education “was [done] twice a year generally and so everybody is included in that. We do [the] workbooks as well and everybody has to complete those as a part of that every year. It is mandatory training really” (Glene, Manager). She further added, “We also do the hand hygiene as well. That is mandatory every year” (Glene, Manager).

Informal education

This type of education was given by the infection control representative to the staff during the joint visit as reported by one participant:

[the informal education] would be when [infection control representative] do joint visits…on a daily basis [she] would be…observing and if [she] picked up on something then [she] will be educating about that point rather than documenting it…[she] will visually watch what they are doing with their hand-hygiene technique and [she] would really look at what products we have got
there, whether they are available. As I said, we like soap to be available in the client house... generally [she] would pick up individually people that might have problem with [infection control practices], [she] will identify [the issue]... and then [she] will address it individually if that was the case (Glene, Manager).

Another method to pick up issues was through the annual infection control audits, as one participant stated:

When we do the clinical audit, which is twice a year. Out of those audits, if we pick up that there has been some inefficiencies, then we will address those in a group generally or individually. But a part from that, it is really about the education that take places out there when [infection control representative] is with them... (Glene, Manager).

To summarise, infection control education was prepared by the education department in the head office of the organisation. The mandatory infection control education included three components that are a PowerPoint lecture, a self-learning package and assessment and hand-hygiene competency. The topics provided to the staff cover the key areas in infection control. The lecture was given twice a year while the self-learning package and hand-hygiene competency were assessed annually. Infection control education was the responsibility of the infection control representative assigned to each service. Informal infection control education was conducted by the infection control representative daily. The infection control representative picked up issues related to infection control by either observing the staff clinical practices during the joint visits or while doing the annual infection control audits. The issues then would be addressed either individually or generally, depending on the type of the issue. Compliance with infection control practices is monitored informally by the infection control representative through the joint visits. The next element discussed is staff health and safety.

**Element 4: Staff health and safety**

Staff health in this organisation included several processes such as vaccinations, work restrictions and the management of exposure to occupational hazards. The processes used for protecting staff in this organisation are explained next.

**Personal health and hygiene**

The personal health and hygiene section of the staff health policy included hand hygiene and uniforms. Hand hygiene was one of the main measures to prevent the transmission of infections (Policy document 13). The manual referred the reader to read
the hand-hygiene guidelines (policy document 14). Staff had to ensure that their uniforms are clean and in good condition. They should change their uniform if it became soiled during the course of the day (policy document 13).

**The health status and precautions**

The staff were duty-bound to put no clients or colleagues at the risk of infections (policy document 13_notification). “Staff with infections should seek appropriate medical care and where there is a risk for transmission of infection, staff must notify the service manager” (policy document 13_notification). The infection control representative should be consulted if one of the staff notified their manager that they are suffering from an infection. The staff should be excluded from work (policy document13_exclusion from duties).

Screening for staphylococcus, streptococcus and salmonella was to be initiated by the service manager if an outbreak or epidemic occurs and the staff feel they were at the risk of the spread of infection (policy document 13_routine screening).

Staff were encouraged to be vaccinated against infectious diseases (policy document 13_vaccination). The manual referred the reader to the staff vaccination against specified infectious disease policy for further information. The staff were not required to provide evidence for immunity against blood-borne diseases. As stated in one policy, “It is not recommended for services to request evidence of compliance for serological testing for blood-borne viruses or conduct routine testing of staff for blood-borne viruses, if standard precautions [are] adhered to” (policy document 13_serological testing). However, staff involved in client care “should be aware of their (HIV/HIC/HIB) status “by seeking serological testing every 12 months” (policy document 13_serological testing). “Staff [were] not obliged to inform [the organisation] about their (HIV/HIB/HIC) status. However, “staff who [were] HIV/HIV/HIC antibodies positive should not perform exposure-prone procedures as injury the staff member may result in blood contamination of the clients’ tissue” (policy document 13_high risk staff).

The staff were encouraged to report any specific conditions such as dermatitis or latex allergies to their service manager (policy document 13_specific condition). “Pregnant staff [were] encouraged to discuss their situation to their service manager. The service manager should advise pregnant staff of the special risk associated with
pregnancy and give them an opportunity to avoid [clients] with specific infections” (policy document 13_pregnant staff).

A policy in the infection control manual indicated that the staff should be encouraged to report their illness and exposure. Decisions on work restrictions should be based on the mode of transmission of and epidemiology of the infectious disease” (policy document 13_high risk staff).

When one participant was asked how they assess and maintain staff health, she answered:

If it is somebody with a present symptom, then we would ask them to be reviewed by the GP, but it does not come up that often. We certainly do not actively [seek that] that I am aware of, or peruse that. [Also], if somebody knows that somebody has communicable disease and they are working here and they are not being tested, I am not sure about the process to be honest. I know there are different policies and procedures for reporting as an individual. We depend on them to inform us about that (Glene, Manager).

When she was asked if they ask the staff to do an initial medical assessment, she said “No nothing here at [this organisation], which is surprising because I know that it is strict in the public healthcare system. But here no, not that I am aware of. I am pretty sure it is not mandatory” (Glene, Manager). Regarding recommended vaccination, she replied, “At orientation they might run through that, but I am pretty sure that it left open to them” (Glene, Manager).

The management of injuries and exposure to blood and body fluids

Instruction on what the staff should do if they were exposed to fluids or substances that pose a risk to blood-borne virus transmission such as blood, plasma, body fluids, and vaginal secretion and semen were provided in the manual (policy document 13_occupational exposure). The staff should immediately remove clothing and shower if necessary, induce bleeding and wash the injured part thoroughly with soap and water, rinse eyes mouth and nose with water for several times (policy document 13_first aid). Then the staff should report the incident immediately to the service manager and complete an incident report form within 24 hours, including the date and time of the exposure, description of how the incident occurred and the name of the source. The service manager was responsible for assessing the incident and the staff vaccination status for Hep B and tetanus should be assessed (policy document 13_reporting incident). The staff were then sent to a qualified medical practitioner to assess the severity of exposure for advice on the first aid treatment, to assess their
current vaccination status, to provide counselling, and to assess the necessity of post-
exposure management (policy document 13_evaluation of exposure). The source of
exposure should be evaluated and tested for HIV/Hep/B Hep C. (policy document
13_managing the source). The manual provided instructions on how to deal with
different scenarios. For example, when the information was available in the client
record or if the source was known and testing is required, if the consent cannot be
obtained from the source and if the source can refuse to be tested or if the source was
unknown. Finally, the staff should be advised on how to prevent the transmission of
blood-borne virus if the exposure was significant. The staff and the client should be
provided with counselling. The staff should follow up with the administration for
medical costs. All the emergency contact numbers should be provided to the staff
during the orientation. In any exposure to incidents, confidentiality of the staff and
clients must be maintained (policy document 13_post treatment).

When one manager participant was asked how to deal with incidents of exposure
to blood and body fluids, she said “We will probably send them to our preferred
medical specialist… we have a nominated doctor now that the staff would go to. That
would be the process if the staff was involved” (Glene, Manager).

To summarise, the health status and precautions section in the Infection Control
Manual covered different issues of staff health such as notifications of infectious
disease, sick leave, screening, vaccination, serological testing, staff allergies, pregnant
staff and high-risk staff. Participants reported that the staff were not required to provide
proof of their current health status or current vaccination status. However, they were
encouraged to declare any health risk issue to their service manager. The process of
exposure to blood and body fluids was detailed in the infection control manual. The
instructions covered immediate action after exposure, the counselling process, the
follow-up and post-exposure management. The management of the source was also
provided in the manual. The process of monitoring infections in CBHVN is discussed in
the next section.

Element 5: The surveillance system

The analysis of documents showed that the “surveillance [is] essential to
prevention and control of infection. It [is] useful in identifying significant breakdowns
in the infection control processes” (policy document13_surveillance). The objective of
surveillance is to “[prevent] and early [identify] potential outbreaks to allow timely investigation and control and to measure the effectiveness of preventive or control measures” (policy document 13_surveillance).

The surveillance system consisted of “routine collection of data from client and surveillance monitoring among [clients], data analysis and interpretation, and dissemination of result to those who need to know, so appropriate action can result” (policy document 13_surveillance). The process of surveillance was detailed in the manual as follows: “Identify infection rate in timely manner, take appropriate action to prevent occurrence of the transmission, evaluate outcome of intervention, review incident and identify trend, document and report the process and the result of the process to the Infection Control Committee” (policy document 13_surveillance). To clarify this, one manager participant was asked about the process of monitoring infection in this branch. She explained it as follows:

We do [monitor] wound infections. We have a folder that [we] use. If we [did a wound] swab, [we] will get those results back and all those results will get into a folder and trending those month by month…so [the surveillance processes is] tied in with some other data that we are getting…and being able to interpret the load of bacteria when it comes back here its either, nil, one plus, two plus, or three pluses, or mild, moderate or high bacterial load, and relying [this information] back to your clinical signs and symptoms and the client’s condition to determine whether to call it a wound infection. There are still some really grey areas in interpreting what infection is. So, for the purposes of our data trending, if anything is three pluses or a high bacterial load was really called localising infection and if we have the associated clinical signs like cellulites and high temperature, then we might say systemic infection. So, all of these are trended every month and then we put a copy into the folder... I do not think anywhere else probably does that. I am not sure if other centres trend their wound infection in community health…but I think that is really important part of infection control program that is lacking across the board (Glene, Manager).

When she was asked what decision she makes after getting the results back, she answered:

Generally those results will come back to us and it will also go to the clients’ general practitioner. They might commence them on antibiotics, but we will make a decision at this level whether or not we will commence them on topical antimicrobial. It is really at our discretion (Glene, Manager).

When she was asked how they plan their actions to prevent the transmission of infection according to these results, the manager replied:

At the end of the day, when we find out that somebody does have an MRSA, here in this centre we would be looking at results and saying, ok this person will go last on our list in our daily practice so we are preventing the transfer of infections to the patients. So there are always strategies. That is really an
offshoot to just taking a swab. I mean, it is not very big, and I know when you are trying to implement any clinical terms it is a lot bigger than just talking about it. But I think it is a very good starting point and we should be looking more broadly at our practice there (Glene, Manager).

When she was asked how these results were reported, she said:

These result will be tabled at our clinical nurse monthly meeting and again we will also table it at our monthly meeting where everybody is involved. That information does not go back to the Infection Control Committee. We do not feed that back to the major committee. It is only for this branch, as far as I am aware (Glene, Manager).

When she was asked how she documents infections, she said, “We fill a [wound infections register]” (Glene, Manager). The following information was required to be filled into the form: client record number, date symptoms commenced, date of swab, results of swab, antimicrobial date commenced, oral antibiotics date commenced, place of occurrence of the infection, and are symptoms resolved (form 1_ wound infection register). “We rely heavily on the registered nurses to obtain the results and put them back into the folder so then [we] could collate them every month” (Glene, Manager).

When she was asked what actions she takes according to the results of infections, she said:

The result that we get from the trending is about identifying bacterial load that might be a risk to others, so we might put him in the end of the list, and if it is an unusual bug then it is interesting. We might do some education around that as well, but otherwise the trending is really the bugs. And we can change the antibiotic, I guess, if we wanted to. There are a lot of whole data that we could take from this information, but at this point it is fairly basic.

To summarise, the surveillance data that were collected were mainly on wound infections. The infection control representative was responsible for monitoring these infections and analysing them monthly. The results of analysis were reported at the regular staff meetings, but they were not reported to the infection control committee.

The infection control representative took action or intervened if required, depending on the results. The environmental issues with regard to implementing infection control are provided next.

**Element 6: The environmental context**

The environmental issues with regard to implementing infection control in this organisation included a clean environment and maintaining the wound dressing
products. When a participant was asked about any challenges with regard to infection control in CBHVN, she said:

In community health it is a little different because you don’t have the clean environment that you do [in hospital]. Sometimes, that can be a challenge but we use a dressing tray for every patient that we do a dressing on. Obviously, the cost of products for clients can be an issue. Well, some people had practised reusing the dressing trays once they have opened it and they used one or two swabs out of there. There has been some practice of them they tying it up and putting it back into a bag and using that for the next dressing. Well this was not acceptable [in this branch]…we stopped that completely. So every patient will have a new dressing tray (Glene, Manager).

She was asked how she dealt with such a challenge if the client was unable to provide a dressing tray each time, she said:

In that case…we will try the shower pressure and there is no problem with that. There is good evidence to support using pressure from the shower on chronic wounds. However, we still need to dry the wound marginally with something, so you are trying to do as much with clean linen. But in the case that they cannot afford it, we may make exceptions but really these days the budget is not stretching that far. Generally, dressing packs are not very expensive, 80 cents or something, so I think that you will find most nurses will find a way to use a dressing pack. We would recommend a new dressing pack with every procedure that you do. The thing that I like to enforce is using a dressing pack because you need to put your dressing on a sterile field. If you are going to cut a piece it is fairly important they we are using a new dressing pack for each time we do the dressing (Glene, Manager).

Preventing the dressing products from being contaminated in the community context was one of the challenges. She further explained:

Look it is not a great practice to cut pieces up and reuse them. But you know, if you are using something like a 10x10 or something like it that is $70 for a piece, it is very expensive. So you can’t justify using part of it and then throwing it away, so we do have to reuse those products. That practice certainly happens, but we try to keep it in a sterile pack and close it if it is not in a sterile container. I guess things around infection control are more about using the scissors to cut the product. So, generally, we will try and have our alcohol swabs or alcohol hand rub to actually wipe the scissors, but I am not convinced that this is a 100% (corporate) appropriate, but that really is the only mechanism that we have out there at the moment. Certainly, I have seen scissors that look that they are rusty (Glene, Manager).

To summarise, in this organisation, the participants relied on single dressing packs to maintain the sterile field in the client home. The other option was to use shower pressure for chronic wounds. Maintaining the wound dressing materials was done by ensuring that the scissors were cleaned with alcohol swabs before they were used to cut the products apart from keeping the rest of the products in a sterile container.
The case summary

In this organisation, the Infection Control Manual was the main source of infection control policies and procedures for the staff. The manual provided the minimum standards for infection, which complied with legal and the best practices. Infection control was managed by an infection control committee, which was headed by a designated person from the head office, and consisted of an infection control representative from each specialty area within the organisation. Each service had a designated person for infection control. The responsibilities of the infection control representative included providing the staff with advice, monitoring and assessing infections, maintaining communication between the different levels of authorities within the organisation and other responsibilities. These representatives formed an infection control committee and met every three months to discuss infection control issues and policy updates. The information from this committee meeting was disseminated to the infection control representatives down to the local services and vice versa.

Formal infection control education was prepared internally by the education department in the head office of the organisation. Infection control education was the responsibility of the infection control representative assigned to each service. Informal infection control education was undertaken by the infection control representative. The infection control representative identified issues related to infection control by either observing the staff’s clinical practices during joint visits or while undertaking the annual infection control audits. The health status and precautions section of the Infection Control Manual covered different issues about staff health. Detailed information was provided in the manual.

Infection surveillance data which were collected were mainly on wound infections. The infection control representative was responsible for monitoring these infections and analysing them monthly. The results of analysis were reported to the regular staff meetings, but the results were not reported to the infection control committee. The infection control representative was the one who took the actions or interventions required, depending on those results.

Infection control was evaluated twice a year through an infection control audit, which was conducted by the infection control representative on a random number of staff. The results were then collated and sent to the head office for analysis. Annual
hand-hygiene competency was also conducted for all the staff. Compliance to infection control practices was monitored informally by the infection control representative through the joint visits. The communication strategies depend mainly on meetings.
Cross-Case Analysis

In this section, a review of all the four cases is provided. The particularities of the cases with regard to the infection prevention and control program structure, processes and evaluation mechanisms are detailed. The structure and processes of infection control in each of the cases were similar but also varied from one case to another. Some processes were similar among all cases. There were some issues with regard to the challenges of implementing infection control raised from the individual interviews and the analysis of documents. Those issues are identified and presented in this section. Focus groups and follow-up interviews were conducted with the home- visiting nurses and managers to discuss these issues and suggest solutions for them. The analysis of focus groups and follow-up interviews is provided in the next chapter.

Element 1: Governance of infection prevention and control

Infection prevention and control in CBHVN was generally informally structured. In three cases, infection control mainly depended on educating staff about safe infection control practices when they were first employed, and then repeated annually. Staff were educated on the following infection control practices: hand hygiene, standard precautions, the aseptic technique, spills, and needlestick injuries management and the safe disposal of sharps. Staff were also sent to training courses for wound management for continuous staff development. External experts were sometimes invited to provide the staff with education when it was required. In one case, the Infection Control Manual was the main source of infection control policies and procedures for the staff. This manual was introduced to the staff during the orientation period. The manual was developed by a panel of experts and it was reviewed by them. In this case, infection control depended on implementing the policies outlined in this manual.

The management of infection prevention and control was divided into two levels. The first level was the strategic level within the whole organisation and the second level was managing infection prevention and control inside the CBHVN branch. For the first level, all cases had a designated staff member(s) to oversee infection control matters, such as developing and reviewing policies, education materials and evaluation of infection control. One case had an identified structure for infection control management that included a committee and network of expertise. The other three cases
designated one person to manage infection control, who generally had a clinical background but was not certified or qualified in infection control. In one case, the designated person was an infection control expert. The second level was managing infection control matters inside the CBHVN branch. There was an issue about managing infection control at this level. Responsibility for implementing infection control was integrated within the role of the branch manager in three cases. Managers were responsible for ensuring the implementation of infection control practices by the staff, evaluating the staff performance, and following-up the staff compliance with infection control training. Managers were also responsible for identifying gaps in staff knowledge and acting upon it by providing or arranging education sessions. In one case, there was a designated person to oversee infection control activities and issues in each branch. Their role was to provide advice and consultation to the staff with regard to infection control matters. These representatives formed an infection control committee that met every three months to discuss infection control issues and update their policies. Managing infection control when there was no designated person meant that staff had to go through a process before reaching the right person to provide them with help. When there was an identified person for infection control, the staff were able to directly contact that person, because they were considered the resource person for infection control matters.

Consultation processes with regard to daily infection control issues varied among the cases because of the variation in responsibility for infection control. However, a common strategy used by all the cases, was a first-line strategy, of self-navigation or self-judgment by the home visiting nurse. The next levels of consultation processes varied. In one case, there was a consultation system implemented where the home-visiting nurses could call their CNCs assigned to provide advice and assistance to them while they were on the road. In another case, the home-visiting nurses called a specialised government resource, such as an infectious disease unit or wound management clinic. In another case, home-visiting nurses called the office to ask their colleagues or the branch manager for advice while in another case, the staff directly contacted the designated infection control person. A common strategy used in all the four cases was: when an issue was not yet resolved, the staff approached the next level of management such as the branch manager, who brought the issue to the attention of the next higher authority such as the head of home-care services or whoever designated to oversee infection control matters in the head office. In one case, the issue was
referred to the designated infection control person and then to the infection control committee for discussion and a solution. The head of the committee would refer the issue to the decision-maker in the head office, if it was required.

Monitoring staff compliance with infection control practices was generally a challenge in CBHVN. Monitoring staff performance was used by the four cases to monitor their practices. In three cases, staff performance was assessed twice a year for each staff member. During the assessment, if the assessor found any issues with the staff member’s practice, it was discussed between the assessor and the staff member and the final report was filed in the staff personnel file. The staff performance was reported to the branch manager, but was not reported to the higher authorities. In one of the cases, staff performance was reviewed unofficially by the designated infection control person during a consultation session. These consultation sessions occurred when the home-visiting nurses called the infection control person for advice. Then both visit the client to assess the problem, such as wound assessment. During that time the infection control person was assessing the staff member’s practice, but it was not documented in the staff member’s file. It was only a verbal assessment and the focus was on education. These visits were conducted on a more regular basis by the infection control person and according to the client’s status and need. Generally, in all four cases, staff performance assessment was used to identify any gaps in knowledge and issues related to the practice and to address them. Monitoring of staff performance in three cases was conducted every six months and not as a daily regular activity. It was not practical to assess home visiting nurse practices on daily basis, because there was no designated person assigned to this role in three cases. Monitoring staff compliance was done on a regular basis in the organisation where they had a designated person assigned to that role.

Evaluation of infection control in CBHVN was a challenge because there were limited tools available. Generally, the strategies used to monitor and evaluate infection control included staff compliance with infection control training, hand hygiene, and feedback from clients. Infection control training was conducted via a self-learning package that included theory and post-examination assessment. Assessment of staff hand-hygiene competency was performed in the branch facilities by the branch manager or CNCs, who used glow lotion and an ultraviolet light to assess hand-hygiene practices. One case reported that they assessed hand-hygiene competencies at the clients’ homes instead of doing it at the branch. The outcome of hand-hygiene
compliance was reported to the head office in all cases. The second strategy was client feedback, which was used in two cases as a strategy to evaluate staff compliance with infection control practices, particularly hand washing and the wearing of gloves. Manager participants reported that this strategy was not always accurate. Another strategy used in one case was monitoring incident reports. Incident report forms at the organisation included a section related to infection notification. The home visiting nurse completed this part to report any infections, such as clients with MRSA. The form was then sent to the head office where a designated person was responsible for following-up with and monitoring these reports to identify the rate of infections in each branch. Response actions for dealing with this infection were usually taken by the local branch. For example, they provided education to staff or implemented transmission-based infection control practices, as required. An infection control audit form was used in one case. The audit was used to assess staff knowledge on infection control policies. Then the audit was reported to the head office and the results were fed back to the branch manager. Staff-review performance processes were used to monitor staff compliance with infection control practices in all cases. Generally, staff performance was used to identify knowledge gaps of the staff rather than evaluating infection control in CBHVN.

Communication strategies (the reporting and feedback mechanisms) with regard to infection control issues in CBHVN included: regular staff meetings, computer programs, clients’ progress notes, memos, and emails. Reports and feedback included policy updates, addressing issues related to infection control raised from client feedback or staff performance and clients’ issues related to infection control, such as infected wounds with MRSA or clients who had infectious diseases. Regular staff meetings were the main strategy used in all cases to discuss infection control issues. In one case, a computer program designated for CBHVN was used by home-visiting nurses to communicate with each other about their clients’ status or to alert each other about the infection status of their clients. Three cases used client progress notes to relay client infection status. In two cases, memos were used for urgent matters. In all cases, emails were sent to the staff to inform them about any update or change in policies.

**Element 2: Infection control policies for client care**

Infection control policies for client care were provided in all four cases. The presentation of these policies varied among cases. One case had a manual for infection control. This manual provided detailed information on standard policies and procedures for infection control practices in CBHVN. In this case, infection control was
implemented by following standard practices outlined in the manual. Another case also had an infection control manual, but the policies focused largely on aged-care facilities and not all policies were applicable to CBHVN. Another two cases had their infection control policies incorporated into workplace health and safety policies. The policies of those cases were short and referred the staff to authorised references for more information. More instruction on infection control procedures was provided in self-learning packages. In three cases, implementing infection control required the staff to apply basic infection control practices during client care. The cross-cases analysis identified eight key infection control policies related to client care in CBHVN. The policies included: hand hygiene, standard and transmission-based precautions, the aseptic technique, sharps management, waste management, spill management, specimen collection and transportation, and client education. More detailed information on each of the policies is provided next.

Hand hygiene was an important measure for preventing infections in all cases. Hand hygiene policies were integrated with standard precautions in three cases while in one case, they had separate hand-hygiene guidelines that included more detailed information, such as the WHO (2014a) concepts of five moments of hand hygiene, hand hygiene and hand-rubbing techniques, and hand-care instructions. Hand hygiene practices were assessed in all the cases. Three cases assessed hand-hygiene practices in the branch, using glow lotion and ultraviolet lights. In one case, hand-hygiene practices were assessed at clients’ homes during the staff performance assessment processes.

Staff were required to use standard precautions with the clients at all times. Standard precautions include using essential precautions such as PPE, hand hygiene, clinical waste and sharps management. In three cases, the provided policies of transmission-based precautions focused on aged-care facilities, which were considered to be controlled environments, unlike clients’ homes, which were considered an uncontrolled environment. In two cases, instructions were provided on how to use transmission-based precautions in the client’s home after consultation with the manager or the assigned infection-control person.

Aseptic techniques were considered a standard practice in three cases. In these cases information was provided on the definition of aseptic techniques and about the types of aseptic techniques, instructions on when to use each type of technique, and
examples. In one case, the option of using aseptic techniques or clean techniques depended on the judgment of the primary nurse.

The disposal of sharps was an issue in CBNHN. Sharps were generally disposed of in sharps containers. However, strategies for the disposing of sharps containers varied among the cases. In two cases, sharps containers for regular usage of sharps were taken back by the home-visiting nurse to the CBHVN branch for disposal. In one case, home-visiting nurses asked the clients to dispose them of in their normal garbage. In another case, clients were asked to take it to the doctor clinic or pharmacy for disposal. There were some emergency or unexpected events when home-visiting nurses had to use sharps as a “once-off”. On these occasions, the sharps were disposed in the client’s regular garbage after they were placed in a sealed, hard container such as milk container. Sometimes, home-visiting nurses had to recap needles and then dispose them of in the client’s garbage bin or bring them back to be disposed of in the CBHVN branch. The disposal of sharps was an issue, especially when the home-visiting nurses had to administer an injection or use a needle in unexpected situations. For clinical waste disposal, all cases followed the regulations of the local council. The policy was to dispose of the clinical waste in the normal garbage after it was double-bagged.

Policies and procedures with regard to spill management were provided to the staff in all four cases. The basic standard procedures were similar in all of the cases. The basic spill management procedure was as follows: isolate the area; use appropriate PPE; use granules to confine the spill and discard; avoid the generation of aerosals; and report the incident to the appropriate authority. In two cases, the basic steps for managing spills were provided, while in the two other cases, more detailed procedures were provided, for example, instructions on how to clean the spill according to the spill size (spots, small or large) were illustrated.

Specimen collection was not a routine standard practice for the home-visiting nurses. In two cases, the home-visiting nurses referred the client to a GP or arranged with a pathology company to go to the client’s home to collect the specimen. However, in two cases, the home-visiting nurses had to transfer body fluid specimens such as urine or wound swabs themselves in special circumstances, such as when clients were unable to leave their homes. In one of these two cases, there were no policies with regard to the collection and transportation of specimens. Staff were provided with special containers or bags for specimen collection and transfer. One case had policies on how to collect and transfer specimens in CBHVN. Home-visiting nurses in this case
reported only the transferring of wound swabs. Clients were referred to a GP or pathology company for other types of specimen collection.

Client education was necessary for helping home-visiting nurses to apply infection control practices in clients’ homes. Client education was not a standard element or policy in any of the four organisations. Only one case mentioned client education briefly in their policies.

The participants in all four cases reported that infection control policies were reviewed and updated, but no specific time-period for regular review was reported by the participants. In one case, the policies were reviewed when the staff raised concerns regarding their practice, which enabled policy review for currency. In the other three cases, the frequency of reviewing and updating policies was not clearly documented. One case had a strategy to ensure the applicability of the policies by asking a designated HVN to provide feedback every time the policies were reviewed.

**Element 3: Staff development and education for infection control**

All four cases had initial and periodical training for infection control. The content of infection control orientations included basic infection control practices. The education materials were particularly focused on hand-hygiene practices. Other infection control practices, such as the usage of PPE, sharps management, and needlestick management, were introduced in a self-learning package in the four cases. In two cases, prepared lectures were given to the staff in the orientation period. In one of those two cases, the lecture focused on hand hygiene. In the other case, the lecture covered basic infection control practices. The responsibility for the annual infection control lecture and the following up of staff compliance with annual infection control training varied between the cases. In one case, it was the responsibility of the designated person for infection control, while in two cases it was the responsibility of the branch manager. In another case, it was integrated within the role of the educational officers.

The clinical practices of the home-visiting nurses were assessed by a staff performance review where the home visiting nurse was accompanied by a senior nurse to assess their clinical practices. This assessment was conducted every six months in three cases.

One case had an educational calendar where they planned different educational topics according to the staff requests. Three cases used external resources for staff development such as: inviting product company representatives to come and provide the
staff with educational sessions or sending the staff to conferences or training courses at their request and according to their interests. Of the three cases who had external resources, one case used a safety meeting as a method to increase awareness of different safety topics and to brainstorm ideas on how to deal with an issue, taking the best practice approach. Different methods were used to deliver education in all of the cases including: verbal orientation, workbooks (theory), lectures, and staff performance appraisal for clinical practices and hand-hygiene practices.

**Element 4: Staff health**

In all four cases, the organisations did not require the staff to inform them of any infectious diseases they had. However, the organisations expected that staff to notify and report to them if they had any infectious diseases. Proof of current medical health status or vaccination status was not required. One case had detailed policies with regard to the health of pregnant staff, high-risk staff, staff with infections and staff allergies. All of the cases had policies and procedures that included the management of exposure to blood and body fluids and post-exposure vaccinations. All cases had well documented policies and procedures on how the staff should deal with exposure to blood and body fluids and needlestick injuries. The processes included reporting, follow up, counselling processes and post-exposure management. One case provided instructions on how to deal with the source of the exposure. All of the cases encouraged the staff to receive vaccinations against the common vaccine-preventable infectious diseases. Annual flu vaccines were provided to the staff in all of the four cases.

**Element 5: The surveillance system for monitoring infections**

Generally, infections including HIAs were informally and locally monitored in CBHVN. One case had a designated person for infection control trained in wound management and surveillance. Wound infections in CBHVN were monitored in that case. There was a form that home-visiting nurses had to fill out when they come back to the office. The information required on the form included: the client record number, the date when the symptoms commenced, the date of swab, the results of the swab, when the antimicrobial commenced, when the oral antibiotics commenced, the place of occurrence of the infection, and the date the symptoms were resolved. At the end of each month, the infection control person would track and trend the data from which actions were then taken, which are mainly related to developing a wound management plan and providing education to staff if a gap in knowledge was identified. Reports from
surveillance were not reported to the higher authorities, such as an infection control committee or the head office. Surveillance was reported internally within the branch. In another case, infections were monitored through an incident report form. Action with regard to a reported infection was taken locally by the branch manager of the CBHVN. Infections were reported to the head office using an incident report form. Every three months, a designated person would monitor and track the trends of those infections to identify the infection rate in each branch. In the other two cases, infections were monitored through the client progress notes or wound management forms. The infections were followed up and monitored by the primary nurse and the treating team for the purpose of treating the clients with infections. The infections rates were not monitored or reported to the head office in those two cases.

**Element 6: The environmental context**

The nature of the community setting, which is a less-controlled environment than the hospital setting, was the biggest challenge in the community context. Clients’ cooperation was important for implementing infection control practices at their homes. Participants reported that there were some environmental challenges that affected implementation of infection control practices in CBHVN. The challenges varied from one case to another. Generally speaking, these included: the lack of resources such as hand-hygiene facilities and equipment, wound-dressing materials and sharps-disposal equipment. Participants also reported environmental issues such as a lack of control of a client’s home environment, pets, vermin and storing space for materials. Another issue was the applicability of the current clinical guidelines for CBHVN.

Practicing hand hygiene was an issue, especially when the facilities were inappropriate for use or the necessary items such as soap and water were not available. The availability of wound dressing materials depended mainly on the financial status of the clients and their ability to provide the essential wound dressing materials to home-visiting nurses to perform the task. Sharps disposal was an issue in some circumstances when the client did not own a sharps container and the home-visiting nurse had to use sharps such as when they need to give an injection. Dangerous practices such as recapping the needle was used to dispose of the needle. As noted by the participants, the application of policies that were hospital based was difficult and in many instances, impractical.
Conclusion

This chapter provided the findings of this study involving the four cases. The findings of each case were presented according to the six infection prevention and control programs elements identified from previous literature and the collected data. Finally, a cross-case analysis of the four cases was presented to synthesise the findings from the four cases and to identify the similarities and differences between the cases. Issues with regard to implementing infection control in CBHVN were discussed in the cross-case analysis. Upon synthesizing all the information for the cross-case analysis, the focus groups and follow-up interviews were conducted with home-visiting nurses and managers to delve into those issues further and to seek solutions to those issues, which are presented next.
CHAPTER 5 – RETURNING TO THE CASES

Focus groups with home-visiting nurses and follow-up interviews with two managers were conducted to confirm the researcher’s understanding of how infection prevention and control programs worked in CBHVN (member checking) and to discuss the identified common issues with regard to implementing infection control in CBHVN in order to determine solutions to those issues. The identified issues discussed were as follows: (i) the management of infection control including: the responsibility of infection control, monitoring staff compliance with infection control practices and the evaluation of infection control; (ii) monitoring infections (surveillance); (iii) environmental challenges; (iv) the lack of facilities and equipment; and (v) infection control policies for CBHVN. The participants also provided suggestions for improving infection prevention and control programs in CBHVN.

The management of infection control in community-based home visiting nursing

Managing infection control in CBHVN was one of the challenges highlighted by the participants, which was underpinned by three subthemes: (i) the responsibility for infection control; (ii) monitoring staff compliance with infection control practices and (iii) evaluating infection control.

The responsibility of infection control

As mentioned in Chapter 4, the responsibility for implementing infection control in three cases was integrated within the role of the branch manager. In one case, there was a designated person to oversee infection control activities and issues in each branch. Their role was to provide advice and consultation on infection control matters to the staff. When this issue was discussed, the participants reported that employing an infection control specialist could be of benefit for implementing proper infection prevention and control programs in CBHVN. One participant said, “Having an infection control specialist for community nursing is important” (Registered Nurse, FG2). Another one mentioned that “Having an infection control specialist would lead to better compliance” (Registered Nurse, FG2). One manager suggested employing a part-time person who is qualified in infection control for the whole organisation as follows, “There are people that you can actually [have] on a contract basis to come and do
reviews of the area and that would be something [the organisation] should look at” (Kathryn, Manager). In contrast, one participant suggested assigning one person in each CBHVN branch as she explained, “[An infection control person for each] branch, so each branch has an infection control person and then they can communicate all over the organisation” (Registered Nurse, FG3).

The participants also suggested that assigning a person to infection control would educate the staff and monitor staff practices, leading to better compliance, as one participant said:

If we have an identified specialist that could run regular sessions...you will see that up-skilling of the staff...and then going out and working alongside [with staff], because that is where you get better compliance, more than in an education session (Registered Nurse, FG2).

One manager participant suggested that having a designated person for infection control would improve the quality of the home-visiting nurses’ practices:

If we had a clinical nurse consultant in infection control who could go and assist our staff that could be a very useful thing. So they are going out into the environment and they are going out with the nurses. They are providing them with direction and supervision and advice. It would lift the standard and it would improve the quality (Nova, Manager).

Another participant suggested that this person would be the staff resource for consultation and advice with regard to any infection control matters:

If we have an infection control person, if you have got any issues, you could go to the infection control person, and they could be the person who goes to the training and gets the most [infection control updates] (Registered Nurse, FG1).

Another participant added that this person should attend regular staff meetings to keep in contact with the staff and discuss infection control matters on a regular basis, “[The designated person for infection control] could be brought to the weekly team meetings so if the staff had issues with any clients relating to infection control that would be discussed at their meeting” (Registered Nurse, FG3).

The participants mentioned that the designated person for infection control should be trained in infection control, but the most important thing is that this person should have a clinical background, especially in community settings. This was suggested because the community environment is different to the hospital one. So, for that person to understand how things go in the community, they should have worked in this setting before. One manager explained:
I would expect that they would have a qualification in infection control. I don’t think it needs to be a medical qualification…you need someone who has stepped outside the area a little bit; they would probably have broader knowledge. Some of the contractors or infection control people are very good because they travel around and they go to hospitals, they go to communities, they go to day-care centres, they go everywhere, so they have very broad knowledge (Kathryn, Manager).

Another participant suggested that the designated person for infection control has to be a nurse, who then is certified in infection control, “It should be someone who is a nurse who wanted to specialise in [infection control]. [They] would do a postgraduate certificate”. She further explained this point:

Having a certificate in infection control might mean you are aware of all [infection control matters] but what is their experience when it does comes to wounds? What is their experience when it comes to pathological things going on the body? That they have not learned [the biology of human body] through [studying health] science, [such as] biology (Registered Nurse, FG2).

One manager stated that inadequate financial support was an issue when it comes to employing a designated person for infection control in each CBHVN branch:

It is all about finance resources, but in the perfect world, it would be great if we had an infection control nurse who was able to in a regular basis go out and view and observe the practices of our staff, to give them advice and direction (Nova, Registered Nurse).

To summarise, the participants suggested employing a qualified clinician for infection control to look after infection control matters and participate in educating, advocating and monitoring staff compliance with infection control practices. However, it was noted that there was a financial cost to this. The next issue discussed is monitoring staff compliance with infection control practices.

**Monitoring staff compliance with infection control practices**

Monitoring staff compliance with infection control practices was also one of the challenges raised by the managers. The managers believed that home-visiting nurses should be responsible and accountable for their infection control practices. One manager reported that implementing proper infection control practices should be the responsibility of the staff, especially registered nurses:

I don’t think it is necessary for someone to be specifically responsible [for monitoring infection control practices] when you are dealing with health professionals such as registered nurse. I am a strong believer that professional accountability and professional ongoing development and training puts a
responsibility on a clinician to ensure that they are au fait with best practice standards such as infection control, aseptic techniques, and clinical-care issues. They need to take some responsibility for those (Nova, Manager).

Likewise, another manager said, “I only have registered staff. The expectation is that the staff keep themselves up-to-date about what the latest practices are” (Kathryn, Manager). This issue was further discussed to explore current strategies used by the managers to monitor staff practices. One manager provided five strategies including: support days, moving staff allocations, clients’ feedback, monitoring the status of wounds, and time management. The manager explained the first strategy, support days, as:

We have always done support days for the staff so one of the clinical nurses go out and do support days with the staff to see how they interact with the clients, their wound care, their paperwork, and all sorts of things so they actually watch how they speak to the client and there is a clean hand towel, and all these sort of things (Kathryn, Manager).

The second strategy was by changing the allocation of the staff. This strategy assisted in identifying if improper practices were applied by the home-visiting nurses. The manager explained this strategy:

The other way is that we actually move the staff around a bit in areas…having somebody else coming in. Not necessary checking on people, but you hear the clients are aware how things differ so they might say, “Oh [X nurse] does not do it like that or [X nurse] uses this”. Then that will usually comeback to me if there is a concern (Kathryn, Manager).

The third strategy was to ensure that client feedback was addressed, as the manager explained, “The other way is making sure that the client[s] have access to contact us if they have got any issues”. The fourth strategy was by monitoring and following up the clients’ wound status, especially unimproved wound healing, and investigating reasons for that. The process was explained by the manager:

The other way which is probably not as efficient…like if we have got a client for a significant length of time and nothing is happening with the wound, we could look probably look for the reasons why or whether there is something there underlying, or if it our practices, is there a problem, or incorrect wound product or whatever it might be. So that is another way that we review the client on a regular basis to see how they are progressing (Kathryn, Manager).
The last strategy was assigning client cases to ensure that the staff had the time to provide care to all their clients without rushing themselves or worrying about the time as explained by the manager:

The other thing I would probably say is that making sure that staff are not pushed too much because...sometimes they rush themselves. So you want to make sure that the staff have time to do everything properly. If [they] have someone who is really high needs and complex, you need to make sure that the staff have adequate time to do whatever it is properly (Kathryn, Manager).

Another manager had a different point of view. She believed that HVN have to be professionally accountable for their practices and actions. She said:

I think it is their responsibility to monitor their practice. They have professional indemnity...If the nurses want to regard themselves as professional people, then we have to allow for professional accountability...you can provide policies and procedures and give it to people, but you can’t be assured as to how they use that information. Some people will use it very diligently and others unfortunately won’t...I personally think if we were more stringent as nurse leaders in promoting the concept of professional accountability then I believe staff, from my experience, take personal ownership...A very strong tool would be for us to improve professional accountability and our concept of supporting it as a professional and encouraging that (Nova, Manager).

She further explained that assessing staff performance do not always provide a true picture of what happen every day. Therefore, promoting professional accountability was a better strategy. She said:

I think...the only way to truly evaluate is to shadow your staff, to occasionally be out there with them and doing evaluation of the practice. However, that is still not well approved, because as we know if you are out under clinical supervision at that time, you will make every effort to practice to your utmost capacity and not cut corners. When you are not there is when usually the problem[s] start because [she is] a busy nurse and [she] have got ten clients to see today and [she is] stressed and...[she has] to go home and [she is] rushing for [her] clients. I am not giving them excuses, but what I am saying that is reality. That is human behaviour. So I don’t have answers. That is why I like my idea that the nurse should be accountable, so greater accountability [is] emphasised to them (Nova, Manager).

One manager reported that monitoring infection control practices in a community setting was not an easy task. She stated that strategies used to assess hand-hygiene practices do not provide accurate results because they are performed onsite. She said:

We do hand-washing competencies, but they are all based here in a controlled environment. When you go out into the home and start [hand] washing, it is a different scenario...it is not the best way to monitor infection control at all through hand-washing competency. Everybody passes (Registered Nurse, FG2).
To summarise, the participants provided various strategies that could be used to monitor staff compliance with infection control practices. The participants reported that those strategies did not always provide an accurate picture of what really happens out in the community. One manager emphasised the importance of encouraging professional accountability by home-visiting nurses to improve staff compliance with infection control practices. The next issue discussed is strategies for evaluating infection control in CBHVN.

**Evaluation of infection control**

The participants reported that the evaluation of infection control in CBHVN was not done systematically. As one manager said when she was asked how infection control was evaluated in CBHVN, “Very poorly. I don’t do it well” (Nova, Manager). This was noted to be the case due to the lack of financial resources and limited tools for evaluation. Lack of resources was one of the factors affecting the evaluation of infection control, as stated by one manager:

I could do it better if I had resources, I guess. It’s not my area of expertise, so what I don’t know, I don’t know. I would not be averse to being able to do it, but I think we could do it better than what we are currently doing (Nova, Manager).

The manager also reported a lack of tools for evaluating infection control in CBHVN:

The tools I have are limited. I trust the staff to be doing the right thing, reporting on incidents. Then I analyse the reports to see if I can identify any trends. These are really the fundamental tools I have got (Nova, Manager).

She further reported that evaluating infection control mainly depended on staff accountability for reporting issues and incidents of infections and for carefully following policies and procedures of infection control, as she explained:

It is really difficult to me to do that, because I am not out there….so I am relying upon just a few tools to be able to assess their capacity. Number one, I am relying on them reporting incidence[s] of infection. If they chose not to or do not, I may never know about it. Number two, I am relying upon a performance reviews of staff. Probably the third thing would be feedback from other staff, if they have any concerns about another practitioner’s practices. Those are probably my limited tools: reports, incident reports, personal reviews of staff, performance reviews and feedback from other colleagues. I am not sure what else I can do (Nova, Manager).

To summarise, the participants suggested that developing tools and providing financial resources for evaluating infection control in CBHVN would assist in the
processes of evaluation infection control. The next issue discussed is monitoring infections in CBHVN.

**Monitoring infections in the community context: Surveillance**

The participants reported that monitoring infections in CBHVN was challenging due to many factors including the nature of the environment, the lack of financial support, and limited tools to monitor infections. Guidelines on what data to collect and how to analyse those data were also limited. In addition, the nature of the setting and context, being the community, contributed to the challenge.

As one manager said, “It is not a controlled environment like in an aged-care facility. We don’t actually document [the rate of infections], because it’s very hard to us to do it” (Kathryn, Manager). The manager suggested that lack of financial support to employ a designated person for infection control surveillance activities was one of the pitfalls:

> I certainly see that it would be a good idea [to monitor clients’ infections]. I don’t know who would be given the job to look at all the data. As we have output-based funding from the government, we don’t get funded for a position to do that type of thing. The document says this is how much money you are going to get and this is how many clients you are going to see (Kathryn, Manager).

Another manager reported that it was difficult to monitor infections in CBHVN because only limited tools were available:

> I can’t [monitor infections] very well. If someone could get me a tool to say this is what I could use to monitor infections and trend them... actually, if you could have a tool that have some validity, some strength, credibility, that would be great. Give me the tool, I would use it (Nova, Manager).

Another reason was the lack of guidelines on what to do with the collected data on infections in CBHVN. One manager shared her opinion:

> They can report [infections] and you will have all these forms, [but] what I am going to do with them. It is really - what are we report on and then our tracking and trending our reported incidences. What I am going to do with them? So you do get them reported, but how do we use it effectively? So what would we do with that data? We get clinical indicators in the home that we can’t do anything about (Jane, Manager).

When the participants were asked about the current strategies used to monitor infections in CBHVN, one manager reported that monitoring infections in her organisation mainly depended on following up with the clients’ incident reports. She would then identifying infection rates and acting upon those results. She explained the process as follows:
Essentially I am relying on clinical staff to inform us by using an incident report…From a management point of view, I feel my role is to monitor through our reporting system, such as client incident reports, the frequency of reported infections. It would be my responsibility to highlight any identified trends of infections or recurring infections that might imply that there is a procedural or clinical problem occurring and that needs to be addressed. So that is the only real tool I will probably say as a manager I would have (Nova, Manager).

She further suggested that infection rates might not be accurate in CBHVN due to limited tools for tracking infections:

I probably suspect there are more infections occurring that are not being reported. I would probably think that we could probably have a higher incidence of infections, but they are not being reported. I suspect that for every infection that is reported there might be one that has not been reported. I don’t have any evidence to support that, so I can’t really say with much confidence. If I could monitor it better, if I could it track better, I would have greater confidence that what we are seeing is representative. But I don’t know how to do that much better (Nova, Manager).

Another manager reported that they monitored wound infections in CBHVN, but they did not calculate the rate:

From wound care, if there are any issues we have got a good wound summary and assessment form. They fill that out to say what [the wound] looks like [necrosis or redness], they can take photos. They do document all of that, but we don’t really collate [trend data] wounds infections….in the community (Kathryn, M).

When the HVN participants were asked for suggestions on how to make monitoring infections more practical, one participant thought that training carers on signs of infections would help with early identification of infection and early intervention, which would lead to better outcomes. She said:

Educate carers…to identify [if] someone has or is beginning to develop an infection…You might not been able to prevent it, but early identification and then intervention empowers carers and staff. They do not have to be afraid that [they] have done it [wrong], that actually [they] have helped because [they] have identified it early and we can put treatment in place quickly and then the resolution is much faster (Registered Nurse, FG2).

To summarise, the participants suggested developing a valid tool and effective guidelines to monitor infections. The participants also suggested employing a designated person to look after infection surveillance activities. They also suggested that educating carers on the signs and symptoms of infections would lead to early identification of infections, with early intervention and maybe fewer complications and better outcomes. The next discussed issue is environmental challenges.
Environmental challenges

Environmental challenges were raised as an issue by the participants. The challenges included: poor client personal hygiene and poor environmental hygiene at the clients’ homes. Each issue is detailed separately next.

Poor client personal hygiene

Participants reported that poor personal hygiene for clients was a common issue that faced home-visiting nurses. They identified that the client hygiene may influence the clients’ health and their ability for fast recovery such as wound healing and that the clients with poor personal hygiene are more prone to infections than others. Participants suggested strategies to encourage clients to improve their personal hygiene. Those strategies included:

- looking for the reasons for poor personal hygiene and trying to solve it or provide alternative solutions
- offering help to clients, such as domestic cleaning or personal assistance
- educating clients and their families about the negative impact of poor hygiene on health
- getting the client’s general practitioner involved
- sometimes providing resources, such as gloves and hand wash
- explaining the implications of good hygiene on reducing the cost of treatment
- building rapport

Participants reported that these strategies were useful when the client was willing to change, but that client cooperation was essential for the home-visiting nurses to be able to help.

The first strategy used by the participants to encourage their clients to improve and maintain their personal hygiene was to try to find the reason for their poor hygiene and to try to find a solution to make it easier for them, as one of the participants said: “To make it as easy as possible for them. To put equipment in their environment that make it easy” (Registered Nurse, FG2). She provided an example:

If the shower is over the bath, they probably won’t be able to climb into the bath, hence they won’t have a shower. So if you were able to put aids in place such as a seat and you can show them how they use that seat, they can actually get in the bath...So put in that sort of equipment to make the task achievable for the person (Registered Nurse, FG2).
Another participant suggested using alternative methods. She said, “We give them an alternative. If they don’t want to shower, then maybe suggest a sponge [bath] [to] make it easier for them” (Registered Nurse, FG2). Another participant suggested providing clients with a helper. She said, “[We could provide] shower assistance…a personal care worker [could] help with…the shower” (Registered Nurse, FG3). Another participant suggested involving the family. She commented, “If they have next of kin or a spouse, then talking with the spouse and encouraging them all the time and more of a gentle approach” (Registered Nurse, FG3).

Another strategy identified for those who can actually do their own personal hygiene, but were not very compliant was to prompt them to get into the shower:

If they are problematic people, they just don’t want to do that. Sometimes if they are able to get to the shower, then you can sometimes ring them half an hour before and say we are coming in half and hour, so you go and jump in the shower and I will do your dressing when you come out. So you are giving them some warning and prompting them to go and you have got time. You will be coming, so their wound does not sit exposed for a very long time. Sometimes that can make them go (Registered Nurse, FG1).

The other suggestion was to educate the client and explain to them the implications of having good personal hygiene. One participant said, “We can encourage them and tell them that if they shower more, then the wound will heal quicker” (Registered Nurse, FG1). Another participant further explained:

Letting [them] know the negative implications for them every time they are refusing the shower. And explaining that we are actually going to irrigate all their wounds out and therefore their wounds might heal a little bit better and be at less risk of infection. So, sometimes it’s just letting them know the implications of not having good hygiene (Registered Nurse, FG3).

Another one suggested, “Getting the general practitioner involved” (Registered Nurse, FG2). She provided an example, “There was a lady who was doing her own wound care and her techniques were really poor, and her house was not cleanest at all. So we had to educate the client, educate the family, get the GP involved” (Registered Nurse, FG2). Another strategy was providing clients with equipment, “We provide them the resources they need like gloves and hand wash. But it does not mean that they always use them. We role model it” (Registered Nurse, FG2).

Participants reported that cost can be an issue for some clients, therefore, talking to the clients about the cost may help in improving the hygiene practices of the clients with poor personal hygiene, she said:
So educating the client on good personal hygiene and things like that, but giving incentives…especially money. At the end of the day, wound care and things like that cost money. So if we get a wound healed quicker, that means less infection, fewer costs in dressing, all of that sort of thing. Sometimes that works, but at the end of the day some people just won’t no matter what (Registered Nurse, FG1).

Another participant suggested that reducing the visit fee could be another strategy, “If they still don’t want anyone to help them too, we can offer them a reduction in fees” (Registered Nurse, FG3).

The next suggested strategy was to build a rapport, because solving this type of issue required time. One participant said:

Building up rapport with clients. Sometimes, it is difficult with a client who won’t agree, initially, to cooperate. So sometimes it takes few weeks to build up a rapport with a client, where they feel comfortable. And then perhaps they will accept the services for [a] shower. Try to keep some consistency there, if it’s going to be a client with deteriorating hygiene; try not to have two different people going in (Registered Nurse, FG3).

Participants reported that client cooperation was important in CBHVN:

The thing that we have to realise is that there are some people who we can help with various things, for example where they are living, etc., while for some people this help would be impossible, if they are not prepared to make changes. We help them as much as we can, but we certainly spend a large portion of our time on a people who do want to make changes (Kathryn, Manager).

To summarise, participants provided several strategies to overcome poor client hygiene practices. However, participants reported that clients’ cooperation was essential for those strategies to be effective. The next discussed issue is environmental hygiene.

**Environment hygiene**

Participants reported that environmental hygiene issues included: dealing with clutter, pets, vermin and storage of equipment and materials at clients’ homes. When participants were asked how they dealt with these challenges, one said, “With great difficulties” (Registered Nurse, FG1). Strategies on how home-visiting nurses deal with each of the abovementioned challenges are explained separately in more detail.

Dealing with home clutter was very challenging in CBHVN as stated by participants, especially when clients were not very cooperative or sometimes were unable to change their circumstances. Participants reported different strategies to overcome this challenge. Strategies included: offering assistance, trying to find an
isolated, clean area to perform their tasks; and using any clean surface, such as a wheelchair or coffee table, when available.

The best solution for addressing clutter in the home described by participants was to be creative and try to work with whatever was available. However, they identified that sometimes it was difficult to change the client’s environment. One participant stated, “Sometimes you can’t change it. You have just got to work within the environment and improve that as best as you can” (Registered Nurse, FG3). Another said, “Sometimes you just have to work with them” (Registered Nurse, FG3). Another participant provided an example as follows:

One of the customers, his house was extremely cluttered…We had to do wound care at his home and he refused to have any other services apart from social support. So we attended to his wound and his clexane injection. We put sharps in a container, we wore gloves and we used hand rub (Registered Nurse, FG2).

Another participant suggested that one of her client’s should get domestic help. She said, “Sometimes you just try to talk to them about having a support worker to go and clean their house for them. Some of them don’t want that either, but some of them do” (Registered Nurse, FG1).

Another strategy was to ask the client to remove clutter, especially if it put staff at risk. One participant said:

It depends if it was unsafe. Then we would have that discussion with the client that we need to make sure that it is safe for our staff to go in. They would probably need to remove [the item] if it was blocking the door so that if something happened and we could [not] get out. If it was unsafe, then we have to have this conversation with them and ask them to move this particular item (Registered Nurse, FG3).

Another participant suggested getting the help of other specialties, “Sometimes, we have to get mental health team involved too, because some of the houses were just full up to the ceiling with rubbish” (Registered Nurse, FG3). Participants also reported various strategies on how to create a workspace in a cluttered environment. One participant said, “Usually [I use] the wheelie walker. You wipe it down and it can be a moved away from everything, so that is always a good option” (Registered Nurse, FG1). Another participant added, “We kept everything high up when we were attending to the wound care — nothing down low” (Registered Nurse, FG2). Another one said, “Sometimes you just have to create your own field to work in. You [have] just go to talk to the client and say. ‘I have to clear this area and clean it and then I am going to use it, because I need a clean field to work in’” (Registered Nurse, FG3). Another participant
added, “Or you perhaps go somewhere else where in the home that is not cluttered” (Registered Nurse, FG3). Another participant said, “[You use] whatever is around, for example a chair. There is always something around that you can pull up (Registered Nurse, FG1). To summarise, strategies used by home-visiting nurses to overcome home clutter included: offering cleaning services, using isolated clean areas to perform tasks at the client’s home, and using any clean surface at the client’s house that is available.

Pets were another environmental challenge reported by home-visiting nurses. However, participants reported that it was a bit easier for home-visiting nurses to control this issue because clients were usually cooperative on this matter. Participants suggested dealing with pets at homes by asking the client to restrain the pet, or remove the pet from the room while they perform the procedure, especially if it was a wound dressing procedure. The responses of home-visiting nurses on this issue were as follows: “We have a policy in place where we ask customers to restrain their animals while we are doing service delivery” (Registered Nurse, FG2). Another said “We ask for the pets to be out outside, if they have a dog or cat” (Registered Nurse, FG1). Another one said, “People generally are going to do that [restrain the pet], so that is fine” (Registered Nurse, FG1). Participants reported that pet hair was also a problem when attending to clients’ wound dressings. Participants reported that they offered assistance in cleaning. One participant mentioned, “We could put cleaning in place, but the person has to accept that” (Registered Nurse, FG3). When they were asked how they dealt with the issue if the client refused the assistance, one participant said, “If it’s only with wound care then we would do that even if there were pet hair there. We certainly have to work around it” (Registered Nurse, FG3). Another participant added, “[We] let them know what the implications are…let them know the risks, and if they are happy we can document that they are happy to have wound care even [when] there was pet hair in the home. That has happened [with one client]” (Registered Nurse, FG3).

Another participant shared her experience of using a protective sheet for the pet hair issue:

Some of the customers we go to visit, we have already put cleaning services in place to help them maintain that environment. But if we are doing wound care and the dog sleeps on the bed, that is where we get our bluie or a sheet from a dressing pack to put underneath. They are in the dressing pack (Registered Nurse, FG2).
To summarise, the strategies provided by home-visiting nurses to deal with pet hair included: suggesting cleaning services, educating the client and using protecting sheets.

Vermin and ‘bugs’ were another challenge reported by home-visiting nurses. Participants shared their experiences, “There was a client who had wasps and mice, because he had all the ratsack on the floor” (Registered Nurse, FG2). Another participant said, “Another client has cockroach droppings everywhere in her house and in her cupboards” (Registered Nurse, FG2). Another also said, “I have been to places that are crawling with cockroaches and stuff like that” (Registered Nurse, FG3).

Participants suggested dealing with vermin by organising with the client for pest control. One participant shared her experience on how she dealt with a client who had a flea problem, “We had [a] lady who [se] home was infested with fleas. We were bitten by fleas every time we went in. We got her to get the pest control people” (Registered Nurse, FG1). Another participant also said, “We will try to discuss it with the family or next of kin to try and get them to find a solution or decide whether they get pest control in” (Registered Nurse, FG2). Similarly one participant said, “We do [call pest control], but we need the approval of the client. If not, the client, then a family member or next of kin” (Registered Nurse, FG3). Another participant shared her experience:

What we did with one of our clients is that we organised pest control to come in and they sprayed the house. We withheld services until they had come to make sure that the environment was safe for our carers, and then we reinstated the visits after that (Registered Nurse, FG3).

One participant reported that sometimes clients were difficult and do not always give permission to solve the problem. In this situation, home-visiting nurses avoided parts of the home:

[For those who] are content to live with that standard of living, there are certain parts of [the] house that we would not engage in, because of the cleanliness level. There were multiple families living within that home, so we have to do what we can and with what we have control over (Registered Nurse, FG2).

One participant reported that depending on the risks involved, withholding the service was used as a method if a client refused to cooperate:

It depends on the standard of living or the level of the hazard in the home. This determines if we are going to continue the service within the customer’s home. If it puts the staff at risk, then we have to make that decision through our health and safety team on whether we need to put our services on hold or withdraw our services due to the risk factors. It is the same with pets as well. But we have to identify the hazards and what risk they are going to pose to our staff (Registered Nurse, FG2).
To summarise, participants suggested to deal with vermin by organising with the client and bringing in pest control, or depending on the risk involved, withholding the service if the client refused to cooperate.

Equipment storage was another issue raised by participants. Participants reported that sometimes clients leave their wound-care materials uncovered and exposed. One participant reported that she asked clients to put materials in proper containers: “We ask the client what they have at home, like a plastic box or snap-lock plastic bags. Some homes are clean, so they stay in the box that they came in from the company and we leave it sealed” (Registered Nurse, FG2). Another participant said, “Most of the care items are stored in the box that they come in… some people provide their own sealed box. Others just have this little box tucked away” (Registered Nurse, FG2). Another participant added “[We] try and keep clean and tidy and [we] try and encourage them to have a specific spot for us to have access to” (Registered Nurse, FG1). Another commented, “You can usually find a spot for the box on the top of fridge or something. That is probably okay” (Registered Nurse, FG1). Another participant shared her experience as follows:

In another organisation where I used to work, I used to ask the clients to provide us with a plastic box with a lid on. I think it is better than a cardboard box or loose bag because these used to get full of dog hair. We asked them to provide it, but if they did not we could provide it and charge them (Registered Nurse, FG1).

Another one said, “We usually keep them in a cupboard or somewhere out of the way of dust and somewhere cool that is not going to really get hot, so things don’t deteriorate” (Registered Nurse, FG3).

Participants also reported that dressing materials came in big packs and they sometimes had to use a small piece of a dressing, and keep the rest for the next visit. Participants were asked how they cleaned scissors before cutting pieces of dressings: “We clean the scissors with alcohol wipes” (Registered Nurse, FG3). Another participant said, “For most of our clients, we get them to clean their scissors [with] antibacterial soap and water…or boil them and then dry them and put them in a bag in the freezer” (Registered Nurse, FG1). Participants were asked about how they stored the extra pieces from the dressing materials for the next visit. One participant said, “Fold it
back up and tape it and put it in a sealed bag” (Registered Nurse, FG3). Another participant used a sterile container:

We use the sterile specimen containers, just like the hospital would. You know like the blue specimen or yellow specimen sterile containers. So if there is some packing rope, which might be a way that we can put it in there and it is all sterile. There is one [specimen container] in our kit as well. So if you are ever in a situation, you would always have one provided by the company (Registered Nurse, FG3).

To summarise, participants reported that they overcome the issue of storage of equipment by asking the clients to keep them in a proper box away from sunlight and pets or in an appropriate cupboard. Extra dressing materials were folded back and sealed and kept with other materials for the next visit. Scissors were cleaned by soap and water and alcohol swabs before they were used to cut the dressing materials. The next discussed issue is lack of resources.

**Lack of resources (equipment and facilities)**

Lack of equipment and facilities included: lack of hand-hygiene facilities at the clients’ homes, lack of wound dressing materials and lack of sharps disposal containers in some circumstances. Each issue is discussed separately.

**Lack of proper or appropriate hand-hygiene facilities**

This was an issue in the community context. One participant reported, “Some of them don’t have adequate hand-washing facilities. They have very dirty sinks, and taps are dirty, and [they use] a cake of soap, [or] the same person or all the family are using the same towel” (Registered Nurse, FG1). Another participant also said, “Some of the environments that [home-visiting nurses] go into in the community, it is hard sometimes to always have the best practice when there is no running water” (Kathryn, Manager). Participants provided several strategies to overcome this issue. The strategies included assessing the client’s environment, asking the client to provide them with proper hand soap and paper towel. However, participants were not always getting these items from the clients. Then, participants would rely on alcohol-based hand rub or hand wipes to clean their hands. Some participants carried their own hand towels while other used the paper towel included in the dressing pack. Some participants used public toilets to wash their hands. Participants suggested providing a hand hygiene kit and hand wipes for home-visiting nurses to use in unusual circumstances, such as with homeless clients or when running water was not available.
The first strategy participants suggested was assessing a client’s home. One participant reported they assessed the home on admission and there was a standard that clients had to provide to the home-visiting nurses:

We know the client we are going to, and we know the houses where you can have access to adequate facilities. So you can definitely have a good hand wash there. This is in our risk assessment. So there must be a level of standard for hand washing facilities (Registered Nurse, FG2).

The second strategy reported by participants was by asking their clients to provide them with hand hygiene equipment, “At the first visit, the assessment nurse used to ask them to buy some pump action soap and a roll of kitchen towel” (Registered Nurse, FG1). Similarly, another participant reported that she asked clients to provide soap and towels, especially if she was doing a wound dressing for the client:

When it is a wound dressing, I always say to the client that they need to provide soap and dry hand towels and a clean environment for us to do the wound care. It does not always happen, but you do what you can do. The majority of the time there is somewhere you can go (Registered Nurse, FG1).

When participants were asked how they dealt with clients who were not able to provide hand-hygiene facilities and equipment, one participant said, “[I would use] the dishwashing stuff in the kitchen. If it is the cleanest place, just get the washing detergent and wash your hands” (Registered Nurse, FG3). Another one said “[I use] baby wipes” (Registered Nurse, FG1). One participant reported that if clean towels are not available, “I usually just shake [my hands] (Registered Nurse, FG1). Another participant also said, “There is one [clean towel] in the dressing pack [I would use it to dry my hands]” (Registered Nurse, FG1). Another participant mentioned, “If there was no clean towel, I don’t wash my hands” (Registered Nurse, FG1). Another participant reported that she carries her own hand towel. She said “If there is a facility to wash my hands, I use my own hand towel rather than using the client’s and [I use the] the hand rub” (Registered Nurse, FG2). Another participant reported using public facilities, “[I] perhaps use community facilities like shopping centres to wash [my] hands” (Registered Nurse, FG2). When participants were asked how they deal with the situation when they needed to wash their hands in the client’s house and the hand hygiene facilities are a risk, participants reported that they mainly relied on using alcohol-based hand rub. One participant said, “Some houses are not worth trying to wash your hands in them. [I use alcohol gel]” (Registered Nurse, FG1). Another participant used gloves and alcohol-based hand rub:
I know the houses that we go to where you just don’t bother washing your hands and I just grab a couple of gloves and my gel and that is fine. I don’t have a problem with doing that. I still feel clean in the end (Registered Nurse, FG1).

When participants were asked what type of hand-hygiene equipment would help them to overcome this issue, one participant said, “The only thing that I would like is a roll of paper towel or wipes” (Registered Nurse, FG2). Another participant said, “The wipes would be something that I would consider, but if you don’t store them correctly they may dry out” (Registered Nurse, FG2). On the other hand, some participants did not see this to be an issue in their context. One participant reported, “Hand washing is not much of a problem, because of that alcohol [gel] (Registered Nurse, FG3). One participant similarly said, “Using alcohol correctly is as effective as washing your hands” (Registered Nurse, FG3). One manager suggested providing a hand hygiene kit for home-visiting nurses to use in circumstances where water is not available. She explained:

It could be [helpful to give nurses] a separate pack that has a little bit of [liquid] soap and paper towel, a plastic bag, and some sterile water...It has merit to consider...It is in the nurses’ kit most of the time and they ought to use it on the odd occasion...I think it would be very helpful for them to have (Nova, Manager).

She further suggested providing hand wipes to home-visiting nurses, she explained:

Hands wipes would be simpler because you are not having [to] mess about with soap and water...I don’t know how effective that is for cleaning your hands...it is possibly an idea worth exploring. I guess you would have to research how effective a surgical cloth would be in cleaning your hands. I would imagine it would be better than nothing...Or maybe use the wipes first to clean your hands and then uses the gels after that...to reinforce it, maybe (Nova, Manager).

To summarise, participants reported that the availability of alcohol-based rubs had made it easier for them to overcome the lack of hand washing facilities in clients’ homes.

Participants suggested to provide hand wipes or hand hygiene kits to home-visiting nurses to use them in those some circumstances when participants are required to wash their and where running water is not available.

**Lack of wound dressing materials**

The issue of lack of wound dressing materials was mainly raised about clients who were not funded for their dressing materials and had to pay for those dressing materials by their own money. One participant said:

Here the program we are working in is funding [wound dressing materials for clients]. But under the [name of program] it was a struggle because customers
are paying for products and [they sometimes do not have the money to buy the products, so we] have to work on the donation pool and that is run dry very quickly (Registered Nurse, FG2).

Another participant said, “In the organisations under [name of program] the customers are paying for the materials and the doctor has to write a script so they can get it cheap, otherwise you might not get the resources you need for that dressing” (Registered Nurse, FG2). Another participant said “It’s very different for us [when compared] to the hospital, because…for us the stuff we are using actually belongs to the [clients]” (Registered Nurse, FG1).

When participants were asked about how they dealt with a shortage of wound dressing materials, one participant said: “We try to keep the cost down for them as far as we can” (Registered Nurse, FG1). Participants reported different strategies to reduce the cost for clients, such as reusing dressing packs in some circumstances when it was possible or when there was instruction on how to store them and clean them, changing the dressing regime, and using cheaper dressing materials or alternative materials such as boiling water for wound dressing instead of buying sterile water. Another strategy was to use materials that were donated by other clients. One participant reported using a dressing pack more than once and providing clients with instructions on how to maintain, clean and store the dressing pack. She explained:

I worked with [an] organisation [in the past] where we did do the [name of program]. We used to provide…[clients] with a little handbook on how to care for the materials that we provided to them. So we reused them even though the package says “single use only”. We used to reuse them and they would go through a particular cleaning process and every customer I used to visit was compliant. They kept them in the right storage container and they actually did a really good job of taking care of your dressing product. I told them how to store it and how to boil water so when we had to do the next service it cut down the cost for them...The wound healing was never delayed, we got good results and we probably were able to use the product two to three times before opening a new pack (Registered Nurse, FG2).

Another participant reported that they only used dressing packs twice if the client’s environment was suitable:

[We use the dressing pack twice] sometimes if the house is reasonably clean and the box is quiet clean and you have only used one or two things out of it. You just keep the stuff that you have not touched at all and you can use it twice (Registered Nurse, FG1).

Another strategy reported by one participant was to refer clients to a wound dressing clinic, “Sometimes we try to refer them to the vascular clinic so they can get reviewed
and get free dressings from the hospital” (Registered Nurse, FG1). Another manager participant reported that home-visiting nurses were provided with basic dressing materials that they can use for those clients who are unable to buy their own dressing materials. She said:

I provide our nursing staff with...a basic wound management kit. [I] offer a dressing kit, and some basic elementary wound dressing products for them to use. I am not suggesting that they are the best and optimal for wound care and wound healing, but if the client is not prepared to purchase the wound care products, of course we still want to be able to provide some sort of wound care (Nova, Manager).

Another participant reported using materials donated from other clients, “We go to the 'poor drawer’, stuff that people donated” (Registered Nurse, FG1). Another strategy was using boiling water rather than buying a sterile water, “You can educate them that it is safe to use boiled water so they don’t have to buy some products they might have thought they have to buy” (Registered Nurse, FG3). Another strategy was to use the shower, “Sometimes you could just shower the wound and you don’t have to use a dressing pack. That is appropriate; you can do that” (Registered Nurse, FG3). Another strategy was to change the dressing regime. One participant reported:

Or maybe we don’t go often. Maybe we are looking at changing what sort of dressing we are using and yes it might be a bit expensive initially but we only go once a week rather than going twice a week or down to two days a week (Registered Nurse, FG3).

To summarise, participants reported several strategies to deal with a shortage of dressing materials issues including: reusing the dressing pack in specific circumstances, referring clients to hospital, using boiling water instead of sterile water, using donated materials, and changing the wound dressing regime if it was appropriate.

**Sharps disposal**

Sharps disposal was reported to be an issue only in some circumstances, for example when the home-visiting nurse had to give an injection and a client did not own a sharps container. When participants were asked about how they dealt with this issue, they reported that most of the time sharps were disposed of in sharps containers in clients’ homes. In some unusual circumstance when the client did not own a sharps container, participants disposed of sharps in glass or plastic containers. Strategies for disposing of these sharps containers or the glass or the plastic containers that continued sharps, varied. It was either taken by the home-visiting nurse to bring it back to the office or disposed of a big wheelie container. Then a specialised company comes and
collects it from the office. Another strategy was to ask the client to take it to their GP’s office or a pharmacy to dispose of it in proper way. The last strategy used was to dispose of sharps containers in clients’ normal bins. One of the participants reported that sharps container disposal is the responsibility of the clients:

In our site, we are not allowed to carry sharps container on us…we purchase them for the customer and they stay in the customer’s house. It’s the customer’s responsibility at the end of the day. We let them know where they can access sharps containers (Registered Nurse, FG2).

One manager also stated that her staff were not allowed to transport sharps in their cars. Sharps containers were disposed of in clients’ normal garbage:

We do not suggest that our staff travel with sharps or containers that are full. They are not allowed to do that, because it is too much of a risk. We have a policy that we don’t travel with sharps containers unless they are empty (Kathryn, Manager).

Other participants similarly reported that they would put sharps in a glass or plastic container and then throw it in clients’ normal garbage. Participant statements included:

“In a glass jars or a milk container or something like that” (Registered Nurse, FG2).

“I would say in a plastic bottle” (Registered Nurse, FG2).

“Milk bottle, something that has a lid on it” (Registered Nurse, FG1).

“I usually ask them for a milk bottle” (Registered Nurse, FG1).

“Just a plastic container” (Registered Nurse, FG1).

When participants were asked if they thought it was allowed to throw the sharps containers in the regular client garbage, they reported that regulations were different from area to another. Some participants reported that it was fine to throw sharps containers in the normal garbage:

[Sharps containers] can be thrown into the normal rubbish and that is acceptable from the council. My staff have access to sharps containers and once they use it, it will stay in the client’s home and that can go into the normal bin (Kathryn, Manager).

Other participants similarly said, “Chuck it in the bin. You are allowed to do that” (Registered Nurse, FG1). Another one said “Double bag them in two plastic shopping bags and tie them up and put them in the waste rubbish” (Registered Nurse, FG1).
Another participant said, “Sharps are allowed to be thrown in the normal bin once the container is full” (Registered Nurse, FG1). Another participant shared her experience as follows:

It’s very rare to happen. On this weekend we had a new lady admitted…for clexane injections and she did not have sharps container and I didn’t have one to give her. So the clexane actually comes with a rubber cap and it’s not very safe of course to put it back on, but you put it back on, which is better than chucking it in the bin the way it is (Registered Nurse, FG1).

While in another area, a participant reported that council regulations were not clear:

I don’t see a lot of education from our local council about how to dispose of sharps within our organisation. We always provide our customers with…appropriate receptacles to put them in and then provide them with details on where they can dispose of them. We encourage them not to throw them in the general waste (Registered Nurse, FG2).

Another manager was asked about the process of dealing with sharps disposal in CBHVN in unlikely situations in her branch:

I provide the sharps containers...They are in an open cupboard where they can help themselves to them. As part of our audit, we do a six-monthly audit on a nurse’s bag and within the audit, the sharps container is a compulsory item…Then it comes back here and we have a big wheelie bin that is a proper sharps one and we have company that comes to remove biomedical waste (Nova, Manager).

She further explained that she would not encourage her staff to throw sharps containers in their clients’ normal garbage because it is risky:

I would not encourage my staff to throw the sharps in a milk container. Hypodermic needles are designed to go into skin, muscle and tissue. So there is big chance it will protrude through a cardboard container and you are putting at risk the people who have to dispose the garbage. I won’t encourage them to use a glass container such as a coffee jar.

When she was asked about the council regulations on disposing of sharps container in clients’ normal garbage, she said:

I don’t know the council rules. They may allow for it, but personally I think that would be irresponsible. I would not encourage my staff to do it. I would want them to put it in a proper sharps container and that sharps container is disposed and incinerated properly. But I don’t know if there is a policy. I just think it is irresponsible to do so (Nova, Manager).

To summarise, sharps disposal was an issue only in circumstances when sharps containers were not available in the client’s home or not provided to home-visiting nurses. Strategies for disposal of sharps containers varied from area to area according to
the councils’ regulations and according to the local policy of the organisation. The next issue discussed is infection control policies for CBHVN.

**Infection control policies for community-based home visiting nursing**

Another challenge reported by participants was the applicability of infection control policies to CBHVN. Participants reported that the available policies and procedures of infection control were mostly hospital-based and sometimes they were not applicable to the community context. Participants reported that having general infection control guidelines that are community-based would be very helpful for home-visiting nurses. One participant stated “I think [having infection control guidelines for community-based nursing] would be helpful. It would be very generalised because everyone is so different. I think you could have certain principles” (Registered Nurse, FG2). Similarly, another participant stated that community-based guidelines should be general and applicable to different distributed community services:

I think I would be very difficult to have a very prescriptive infection control type policy that would be sufficiently specific, but generic enough to be applicable across multiple communities because the environment is different, the economic situation and geographical areas are fundamentally different. Even the climate is different [high humidity, dry, heat, cold, damp]. These are factors for consideration (Nova, Manager).

Participants were asked to provide their thoughts on how infection control policies could be more applicable to community-based nursing. Participants reported that policies should be realistic, general and address the context: “Just make it realistic to our standards” (Registered Nurse, FG1). “It would be kind of generic for all services” (Registered Nurse, FG1). “I think if the policy is given a generalised direction...If it could stipulate an overarching principle of practice (Nova, Manager). “Understanding that it is not hospital nursing” (Registered Nurse, FG1). One participant reported that community-based policies should address the challenges in the context to reassure home-visiting nurses that they are doing best practice according to community context:

A community policy would be great to give recognition to what were are doing and the fact that it is relevant to what we are doing. So we are not telling staff, well we can’t do that but are we wrong if we do something else rather than all this in the hospital (Registered Nurse, FG1).
Another participant further explained that the single-use concept was not applicable for community context, because clients are paying for the materials:

Single use is just not doable. I mean it is ideal but it is not doable, because the government is not paying for it. The person in front of you is struggling to pay for rent and everything else and they don’t want to be spending more and more on that (Registered Nurse, FG1).

Another participant further explained that most of the procedures in the community were clean rather than sterile, “I would like to emphasise that we are doing is a clean procedure, not sterile. Chronic wounds are clean procedures not sterile procedures” (Registered Nurse, FG1). Another participant further added:

All of us will deal with chronic wounds. We go in maybe three or four times a week. We might use a dressing pack twice, maybe even three times at a push, because people can’t afford the dressings. You are really in a clean environment, your hands are clean, their legs are clean and things like that and that’s the best you can do in that environment really. If people could think of anything better than that, we would probably do it (Registered Nurse, FG1).

On the other hand, another participant had a different opinion. She believed that sterile procedures were doable in community, but the environmental barriers could be an issue:

We do sterile procedures. We do catheterisation and drainage…You just get two people to make sure it is sterile. We wear proper sterile gloves. We create a field. We have a sterile pack and we use sterile techniques…I guess the only difference is the environmental barrier; that you might have poorer control than in a hospital (Registered Nurse, FG3).

Another participant suggested, “The only difference might be the resources. Like we don’t have access to resources for example, ‘Oh I drop that, oh I will go and get another one’” (Registered Nurse, FG3). While other participant had a totally different point of view. She said, “Infection control is pretty standard whether it is a hospital or home. There are core principles that are always the same” (Registered Nurse, FG3).

Participants also emphasised that the person who develops the policies should have a community background, so as to be able to understand the challenges in the context. One participant explained:

Not everybody has done community nursing. [If the person had community background] then [they] can appreciate what the pitfalls are or what you are actually going in to…so people [who develop policies] need to be aware of that. Rather than people that have never done community nursing to say this is the policy and this is what you should do, and you “go that is fine, but you come and see this house and tell me how I can do that”. So [polices should be] adaptable, which would help us to say, well look that is okay, when you go you do this and you do that (Registered Nurse, FG1).
Another participant also emphasised that policies should be modified to address the challenges in the community:

We are going into homes, so we can go into prefect houses and we can go into very poorly maintained homes. Sometimes nurses will not wash their hands in a client’s home, because there is more risk for them [by washing hands in an unhygienic environment]. So, a policy that would deal with that. I think we have an unspoken rule where we will practice normal and proper hand washing and encourage it to be done, but it might be only necessary that you use something like [alcohol-based] to hand wash because of your environment, so you have to be adaptive (Nova, Manager).

One participant reported that the applicability of policies to the community context should be ensured by asking opinions of those people who work in that field. She explained:

When they are doing these infection control policies, especially for community and aged care, they [need to] get input from the people who work in those areas…that is much better than having someone sitting up in the office at [city] saying this is now how you wash your hands, because they google it and that is what they found… [Also] I suppose they need to be updated on a regular basis… It does not have to be annually, but you need to have someone who has oversight of it, so it’s looked at every couple of years at least…it is not going to be like a hospital. There is always going to be a bit of a gap between what is perfect and what we can achieve, but hopefully over time that will get less and less [of a problem] (Kathryn, Manager).

Another participant reported that the applicability of infection control policies to the community context could be examined by research, “I think [applicability of policies] would be [done by] one of those research funded sort of things that you have to implement something and then try it and see how it felt in practice and modify it” (Registered Nurse, FG2).

To summarise, participants reported that developing community-based policies would assist home-visiting nurses to ensure they are undertaking best practice according to standards applicable to the community context, not a hospital context. Participants emphasised that polices should be general, and flexible to adapt to the community context, especially when the community context is unstable and differs from client to client.

**Suggestions for improvement**

Participants provided some suggestions for improvement of infection control programs in the community context. Participants provided suggestions related financial
resources, staff education and research. One participant suggested that CBHVN organisations should have specific funds for hand-hygiene equipment such as hand soap, hand towels, and alcohol-based rub for home-visiting nurses to ensure they are always available:

I think maybe like funding for hygiene for us. I don’t know how it really works, but you know making sure that… hand washing and all those sorts of things are provided to us and they are available for every visit (Registered Nurse, FG1).

Another participant similarly said, “Yeah, exactly, rather than us making [clients provide it]” (Registered Nurse, FG1). Another participant commented that a policy or recommendation authorised by management would help enforcing it, “I think it would be interesting to have something from management…So, recommendations for companies on what they should be providing for their employees” (Registered Nurse, FG1). Another participant agreed and said, “Yeah, what should be standard across community nursing” (Registered Nurse, FG1). Another participant added, “Recommendations to companies on the standard equipment that should be provided to community nurses” (Registered Nurse, FG1). Another participant further explained:

So if you are involved in any kind of care in the community and you are an employer having access to this, this is what you should be providing your employees with for safe practice for them and for the clients I suppose (Registered Nurse, FG1).

Another suggestion related to staff development and education. Participants suggested reviewing infection control education material to make sure it is up-to-date. One participant said, “We do the [online self-learning materials] every year and [someone should be] looking into that to see if it is the most up-to-date or if we keep doing the same thing every year” (Registered Nurse, FG1).

Participants also suggested educating nurses using entertainment to attract staff’s attention, rather than depending on the regular education strategies. One participant explained by providing an example:

I like brightly coloured hand-wash foam, just to make it fun to engage people…you know people get bored with the same thing and they are going, ‘Oh here is another thing you want me to do’. But to make it fun [is helpful] (Registered Nurse, FG2).

Participants also suggested improving communication between CBHVN organisations in specific geographical area would help home-visiting nurses to learn from each other and share experiences. One participant said:
I think the community in the main is underestimated, the care that we are providing and what we actually do. The procedures and policies and things like that, there is very little to work with. I mean we use a lot of common sense, but you can’t say that there is a policy that you go to and this is how you deal with it. You tend to ask each other how you deal with this or how you deal with that. So having things like little working parties where you have people from different organisations so you find out what everyone is doing. Kind of best practice over Queensland. So, you are getting opinions on a lot of different kinds of communities and people are working together. Because everybody has different problems and issues and we all know how we deal with it the best way for us, and then they know how to deal with it best way for them. So you got lots of ideas from different people (Registered Nurse, FG1).

One manager reported that adding an infection control topic to the regular meeting of the CBHVN group meeting would assist in identifying and sharing with other organisations about infection control issues in CBHVN and how to deal with them:

We get together on a regular basis in [CBHVN advisory group]. We meet every 6–8 weeks. We do some education together... Certainly infection control would be a great one. We could easily get together and talk about issues that we have had...So infection control could be easily be one of the things that we could discuss (Kathryn, Manager).

Another manager also suggested arranging combined education with other organisations and inviting an infection control expert in community settings to provide a training course. She said:

We do a lot of combined education. It is like different services will get together and we regularly look at areas of joint clinical education where the [HVN] can come together and we will do a training course and we will all be together. We could possibly do something around infection control and infection management (Nova, Manager).

The same manager also suggested that home-visiting nurses should be proactive and update themselves about the best practices in infection control for community settings. She said:

I guess another area we are needing to be more diligent in is research, such as going in the internet looking for best practices and occasionally going into nursing websites, because I know that these organisation are providing a lot of support and educational materials. Maybe we need to encourage ourselves and our nurses to be more diligent in that area (Nova, Manager).

The last improvement suggestion provided by participants was related to research in the community context. One participant said, “I think there is a lot of talking to be done about community nursing and it seems that people are not making an effort
to find out about it and make it a little better so…more research in the community is required (Registered Nurse, FG1).

To summarise, participants provided suggestions for improving infection control in the community setting. The suggestions included several areas: financial support, staff development and training and research.

**Conclusion**

This chapter discussed five issues that were identified from focus group conducted with participants following presenting the cross-case analysis. Detailed information on the issues was provided and participants provided suggestions and strategies they used to overcome those identified issues. The next chapter discusses the findings from chapter four and five.
CHAPTER 6 - DISCUSSION

An overview of the chapter

In this chapter the findings of the research are examined relative to the existing literature and original research problem and questions. The discussion is presented in a series of six papers intended for publication in peer reviewed journals. Each paper focuses on one element of infection prevention and control program that was identified from the analysis of the data.

Declaration: I, Ohood Felemban, am the lead author of the following papers and take overall responsibility for them.

1. Felemban, O., Shaban, R.Z., St John, W. (Paper A). Governance and management of infection prevention and control programs in Community-Based Home Visiting Nursing. For submission to the American Journal of Infection Control

2. Felemban, O., St John, W., Shaban, R. Z. (Paper B). Infection control policies for client care in community-based home visiting context. For submission to the International Journal of Infection Control

3. Felemban, O., St John, W., Shaban, R. Z. (Paper D). Infection control education program in Community-Based Home Visiting Nursing. For submission to the British Journal of Community Nursing

4. Felemban, O., Shaban, R. Z., St John, W. (Paper C). Staff health and safety in Community-Based Home Visiting Nursing. For submission to the International Journal Of Occupational Health and Public Health Nursing


6. Felemban, O., St John, W., Shaban, R. Z. (Paper F). Influence of environmental context on implementing infection control in community-based home visiting nursing. For submission to the Journal of Community Nursing

All named authors meet the definitions of authorship as established by the International Committee of Medical Journal Editors (ICMJE) as follows:
(a) Substantial contributions to the conception or design of the work; or the acquisition, analysis, or interpretation of data for the work; AND
(b) Drafting the work or revising it critically for important intellectual content; AND
(c) Final approval of the version to be published; AND
(d) Agreement to be accountable for all aspects of the work in ensuring that questions related to the accuracy or integrity of any part of the work are appropriately investigated and resolved.

Papers are presented in the style of the thesis as a whole, and references for each paper are collated with all references for the whole thesis. It should be noted that some material that is presented in the previous chapters of this thesis is necessarily represented in each of the papers

Signed:

Name of Student:  Ohood Othman Felemban
Date:    20 August 2014

Signed:

Name of Supervisor:  Ramon Zenel Shaban
Date:    20 August 2014
Paper 1: Governance and management of infection prevention and control programs in community-based home visiting nursing in Australia

Target Journal: American Journal of Infection Control

Abstract

Aim: Providing care to patients and their families in community settings, in their home, is increasingly popular. As more and more healthcare is delivered in community or extra-hospital settings, so too do the risks of transmission of healthcare-associated infections. Despite this increasingly popular trend, there is limited research that explores what infection prevention and control programs exist in community contexts, especially in home-healthcare services, and how they operate. This paper presents the results of a study that examined the governance and management structures and processes of infection prevention and control programs in community-based home visiting nursing in Australia, and how they operate.

Methodology: An exploratory case study was conducted in four community-based home visiting nursing organisations in southeast Queensland, in Australia using data triangulation (document review, individual interviews and focus groups). Documents were reviewed, and interviews and focus groups were conducted with (28) staff. Structures and management plans of infection prevention and control programs, including the responsibilities for infection control, were explored. Data were analysed using the framework approach (Pope, Ziebland & Mays, 2000) to identify themes and six main elements for infection prevention and control programs were identified.

Findings: In this study, infection prevention control programs were informally structured. Implementing infection control mainly depended on one element of infection control that is educating staff on basic infection control practices. This was not consistent with the current standards and policies. There was no formal infection control management plan documented and no reference to the legislative requirements of the Public Health Act 2005 or Standard 3 of the Australian Commission on Safety and Quality in Healthcare (ACSQHC). There was limited number of infection control professionals employed in community-based home visiting nursing.

Conclusion: Formal documentation of infection control management plans is required to ensure effective infection control strategies are implemented to prevent and control healthcare-associated infections in community settings. Employing infection control
professionals may assist in managing infection prevention and control programs more efficiently.
Introduction

Infection prevention and control is a cornerstone for quality and safety in healthcare (McGoldrick, 2007). Preventing the transmission of Healthcare-Associated Infections (HAIs) is essential to these efforts (Embil, Dyck & Plourde, 2009). The provision of an effective infection control program is fundamental to achieving safe and high quality healthcare services (Damani, 2003). All facilities that provide direct client care are obliged to provide health and safety workplace to their employees and clients (McCulloch, 2000). For this to occur, well-structured and resourced infection prevention and control programs are required.

Generally speaking, formal healthcare has traditionally been provided in hospital settings. However, healthcare has, in recent times, evolved rapidly with some of the complex care traditionally provided in hospitals increasingly being provided in community-based settings (Haiduven & Ferrol, 2004). Community-based home visiting nursing (CBHVN) services have become a major provider of healthcare (Javris, 2001). Patients are discharged home with a central lines and other indwelling catheters, complicated and chronic wounds, and intravenous medications (Kralik & Van Loon, 2011) and receive care by home-visiting nurses from CBHVN organisations (Felemban, 2010). However, HAIs are not only limited to hospitals; they occur wherever healthcare is provided. Infection control practices for CBHVN have been the subject of some, but limited, existing research. Some studies have focused on a single aspect of practice, such as hand hygiene (Bennett, & Mansell, 2004; Felemban, St John, Shaban, 2012; Gould et al, 2000; Kenny, 2002; Nakano, Ohno & Yasumura, 2002). Other studies have explored a group of practices such as standard precautions, sharps handling, disinfection and sterilisation, and waste management (Bennett, & Mansell, 2004; Rankin & Kean, 2005; Hoy & Richmond, 2009; Swanson & Jeans, 2011; Dacey & Dufficy, 1998). However, none of these studies examined the management structures of infection prevention and control programs and strategies more broadly.

At the national level in Australia, various guidelines and standards exist that are relevant to CBHVN. In 2010, the NHMRC published the Australian Guidelines for the Prevention and Control of Infection in Healthcare, in which they established six key elements of a successful infection prevention and control program. These are: (i) prevention and control measures practices (ii) surveillance (iii) policies and procedures (iv) risk management (v) education and training (vi) quality improvement and
monitoring and review. These elements are considered critical because they play a major role in the prevention and control of the transmission of HAIs (NHMRC, 2010). The NHMRC guidelines are considered to be fundamental, because they are based on the best available evidence-based guidelines in Australia that address the critical aspects of infection prevention and control in healthcare settings (NHMRC, 2010). Most recently, the ACSQHC (2011) developed the *National Safety and Quality Improvement Health Service Standards* (NSQHS), of which there are ten. Of these, Standard 3 aims to prevent patients from acquiring HAIs and provides a framework for employing evidence-based strategies to control, manage and prevent HAIs. Standard 3 is comprises of outline six criteria. They are: (i) governance and systems for infection prevention control an surveillance; (ii) infection prevention and control strategies; (iii) managing patients with infection and colonisations; (iv) antimicrobial stewardship (v) cleaning, disinfection and sterilisation; (vi) and communicating with patients and carers.

Implementation strategies accompany each of the criteria. The strategies can be used and tailored according to the size, structure, and complexity of healthcare delivery services. The suggested strategies for Standard 3 were developed in line with the best evidence found in the NHMRC guidelines (ACSQHC, 2011).

In recent times in Queensland, there have been initiatives to address infection control issues in the CBHVN. In 2005, *the Public Health Act* established a requirement of healthcare facilities to have an Infection Control Management Plan (ICMP). An ICMP is defined as an official and systemic clinical governance process that is designed to enable institutions to meet their infection prevention and control obligations, and to ensure the safety and quality of the services provided (Shaban & Kralik, 2011). The ICMP must identify the infection risks at the facility and detail the measures to be taken to prevent or minimise the risks (Centre for Healthcare Related Infection Surveillance and Prevention [CHRISP], 2010b). In response, the CHRISP published infection control guidelines in which they determined an ICMP for non-hospital settings, comprised of ten elements that are important for preventing and controlling infections in the community context. ICMPs enable healthcare professionals to ensure that infection control programs are operated to ensure the provision of safe and quality care services. In response to the increasing focus on healthcare in the home, various entities have published policies and guidelines to inform these practices. For example, the Queensland Government published an *Infection Control Manual for Home Care Services* in 2009. The manual provided guidelines for infection control principles that
home healthcare workers are required to follow as they perform their duties (Geary, Whitta & Taylor, 2009). The guidelines included standards and transmission-based precautions, waste handling, staff health and food handling. The manual, however, lacks recommendations with regard to the management structures of infection prevention and control programs in CBHVN.

Information related to the structure and management of infection control in CBHVN is scant. Most of the guidelines and recommendations focus mainly on hospital-settings. There are a few infection-control organisations that provide guidelines on infection control management in CBHVN, such as the Association for Professional in Infection Control and Epidemiology (APIC) and the Joint Commission on Accreditation of Healthcare Organization (JCAHO). The structures of infection prevention and control programs management has varied from country to country, depending on the available resources and guidelines. Each healthcare facility should structure their infection prevention and control programs according to the context and services provided and each healthcare facility should have an ICMP to monitor and evaluate infection prevention and control programs processes to achieve their outcome. There is little published research on what comprises infection prevention and control programs in CBHVN and how they operate. The aim of this study was to explore the management structures and processes within infection prevention and control programs management in CBHVN, and to understand how they operate.

Methodology

This paper reports one aspect of a major case study investigating infection prevention and control programs in four CBHVN organisations’ in southeast Queensland, Australia (Felemban, 2014). Exploratory case study approach and multiple-case design according to Yin (2009) was used to gain a holistic and deep understanding about the structure and processes of infection prevention and control program in CBHVN. Donabedian’s framework (2005) was used to explore the structures of infection prevention and control programs (essential elements and policies); processes of infection prevention and control programs (management and implementation); and outcomes of infection prevention and control programs (surveillance and evaluation). Elements of best practice in infection prevention and control programs were identified from the literature and guided data collection. Triangulation of data sources included: a document review, individual interviews and focus groups. The researcher’s and the participating organisations’ research ethics
committees approved the study. Home visiting nurses and managers of CBHVN services branches were invited to participate in the study.

Documents from each organisation related to infection control were reviewed to explore the structures of infection prevention and control programs in each organisation and how they were expected to operate. Table 1 describes the types of documents reviewed and the checklist used to guide the review. Interviews with home-visiting nurses and managers were conducted to investigate their perspective on the structure and management of infection prevention and control programs and to explore issues related to applying infection control practices in a community context. A brief questionnaire also was used to collect participants’ demographic information (see Table 4).

The interview guide for managers included questions about infection control management. The interview guide for home-visiting nurses explored their perspectives on how governance and processes of infection prevention and control programs were implemented and issues related to applying infection control in the community context. Following cross-case analysis of data from all four organisations, focus groups with home-visiting nurses and follow-up interviews with managers were conducted to explore solutions for the issues raised from the document review and individual interviews. The topics included in interviews with home visiting nurses, managers, and focus groups are described in Table 2.

Four not-for-profit CBHVN organisations participated in the parent study. Descriptions of the organisations are provided in Table 3. A total of 28 staff participated in the study between September 2012 and December 2013. A total of sixteen individual interviews were conducted. A total of twenty one staff participated in three focus groups. The duration of each interview and focus groups was between 45 and 60 minutes. The structure of infection prevention and control programs was explored in one branch of each of the participating organisation, including the role of the designated staff for infection control in managing infection prevention and control programs. The processes used to implement, monitor and evaluate infection prevention and control programs in one branch of each of the participating organisations were explored.

Data analysis

A framework approach (Pope, Ziebland & Mays, 2000) was used to guide data analysis and to link the emerging themes (elements) with the emerging theoretical
(conceptual) framework. Notes taken from the document review and the interviews and focus groups transcripts were read. Six key elements for infection prevention and control programs were identified as follows: (i) governance of infection control (ii) infection control policies for client care (iii) staff development and training in infection control (iv) staff health and safety (v) surveillance systems (vi) the environmental context. These six elements provided a conceptual framework (theoretical structure) for the findings of the four cases and cross-case analysis. In this paper, the findings of one element, governance and management of infection control, is presented and discussed in detail.

Findings

The structure of infection prevention and control programs

Infection control in CBHVN was generally informally structured. In three organisations, the management of infection control depended mainly on ensuring staff education on safe infection control practices when they were newly employed, and then annually thereafter. One participant said, “[The organisation] does not have a specific program as such within the [CBHVN]… in the [CBHVN], basically [it is] a mandatory [infection control] training that we do every year” (Kathryn). Likewise, another manager participant mentioned that, “The only infection control in [CBHVN services] is mandatory [infection control training] that we do once a year. It is part of our workplace health and safety program…the infection control program that it is run here is very basic” (Amal). In one organisation, the infection control manual was the main source of infection control policies and procedures for the staff. This manual was introduced to staff in their orientation period. Infection control depended on implementing this manual. One participant stated, “We have a manual and that is really our main source [for infection control policies and procedures]” (Glene). A key feature across all organisations was that the responsibility for infection control was divided into two levels. The first level was for the whole organisation and the second level was inside the branch. Both levels of responsibilities are explained next.

Responsibility of infection prevention and control programs management

The first level of managing infection control was at the whole-of-organisation level, which mainly included developing, reviewing and updating infection control policies and procedures. The second level was managing infection control within each CBHVN branch, which included managing daily activities of infection control and be
the contact person with the first level. The responsibility for managing infection control for the whole organisation varied. Some organisations designated one person to manage infection control matters for the whole organisation. As one participant said, “We employ a lady who has a master in infection control and we are probably looking at making her our infection control expert for aged care for the whole organisation” (Jane). In another organisation, the person responsible for infection control was not certified in infection control, but had a health science background. One participant said, “She is a very experienced registered nurse...She looks after the wound care, the palliative care, [and] infection control” (Kathryn). In another organisation, infection control issues were reported to the quality department. One participant said, “If we identify that we have [an infection control issue], we submit a [designated form] and that goes to the quality control within our corporate office” (Jane). Other organisations established an infection control committee that constituted several infection control representatives from different services in the organisation. This committee was headed by staff from the head office who, in turn, would connect with a network of experts who oversee infection control matters for the whole organisation. One participant said:

We have an infection control committee, which is at a higher level...The committee members are generally representatives from all around different clusters...[The committee is usually headed by] a support officer from the education department or from one of the head offices (Glene).

Managing daily activities of infection control within the branch varied as well. In most, the responsibility for implementing infection control was integrated with the role of the branch manager of CBHVN services. One of the participating managers said, “I am responsible for making sure that it is followed through...the staff are educated in standard precautions that they understand. They understand that they have to treat everybody the same...Also, the safe utilisation of sharps” (Kathryn). None of the branch managers reported having infection control experience nor were they certified in infection control. In one organisation there was a designated person to follow up infection control issues. The policy of that organisation encouraged their services to, “Designate an individual to have responsibility for infection control...The representative can be anyone who has received training in infection control” (policy document 13_infection control representation).

Managing infection prevention and control programs

The processes for managing infection prevention and control programs varied among all organisations. The processes generally included developing infection control
policies and procedures, infections surveillance, consultation systems, staff training, maintaining staff health, and monitoring and evaluating infection prevention and control programs. All processes are explained in more detail next.

Infection control policies and procedures

A common feature of the cases was that the health and safety of their clients was ensured by adopting infection control principles that minimise the risk of the staff and clients to acquiring HAIs. The practice of infection control in CBHVN depended mainly on applying basic infection control practices in clients’ homes. One participant reported, the available policies in the organisation included, “Hand hygiene policy…use of asepsis…use of standard precautions…immunisation recommendations for client contact care workers, use of personal protective equipment, how to clean a blood spill, [and] cleaning the environment” (Jana). Another participant described the infection control practices for client care as follows:

The [home visiting nurses] do wear gloves when they are going to a client’s home if they are going to do a dressing or if there is going to be any bodily fluid or anything like that. We also make sure that they have sharps boxes if there are any sharps that need to be disposed of, if they are doing blood sugar [testing] then obviously there is the specific boxes we need to put the needles into afterwards. (Amal)

The form of infection control policies varied. One organisation developed an infection control manual. Other organisations integrated infection control policies within workplace health and safety policies in the quality management manual. As one manager stated:

If I go to the safety component, it is within our work health and safety policy. There is a component in there around infection control. It is not an outline of infection control, but it does talk about utilising universal precautions and our responsibility to keep ourselves safe and also protecting clients. That is what I follow here at this site. (Jane)

In one organisation, the policies were brief and mainly directed staff to read more detailed information on the governmental references as one participant said:

In our quality management system (QMS)...in the user guides it then gives you, down the bottom, other places where you can actually go and get further information. That is what they have basically gone towards now with all of our policies and procedures, instead of reproducing something that somebody else has done. You know, [there are] issues with copyright etc. They will point you in the direction of where to go to find out the information. (Kathryn)

A common feature among all organisations was that infection control policies and procedures were introduced to staff during the orientation. One participant reported, “In the orientation… [infection control policies] is something that is on [the staff]
checklist that they need to go through” (Amal). Policies and procedures were accessible through the intranet in all organisations, as well as in hard copy format. One participant reported, “It is available online. I believe as well the nursing supervisor has a hard copy” (Sara). Policy updates were generally communicated to staff by emails and through staff meeting in all organisations. One participant said, “We get an email… and it says, ‘this policy is been updated. Please print it out and let the staff know or please bring into the next RN meeting’” (Amal). An interesting finding is that the review of applicability of infection control policies to CBHVN was conducted in one organisation only. The strategy used was by asking for a representative from CBHVN services to review the policies and provide their feedback. One participant stated:

We have a central policy review group, and what we do with that is we will ask for representation from each area. So we will usually contact someone like the [branch manager] and ask, ‘Who in your service would like to represent you in the review of the infection control policy?’ [The branch manager] will usually point us to someone who has interest an in infection control. So then we will contact that person and ask them for their feedback on the policy. (Jana)

Surveillance and epidemiology

All organisations reported that infectious diseases were notified by the CBHVN branch manager or infection control person to the appropriate authorities as instructed on the Queensland Health’s governmental website. One participant said, “We comply with the guidelines. We ring up the local public health office from the listed notifiable diseases” (Jana). Despite this, surveillance of HAIs was not systematic, standard practice in CBHVN. Only two organisations reported some form of monitoring and trending of infections generally, which included HAIs. The strategy used to monitor infections varied. In one organisation, home-visiting nurses were advised to report infections to their head office to monitor and to manage the problem. The infections were reported using an incident report form. The quality management manager was responsible for tracking, trending and reviewing the infections rate.

We do incidence reporting and analysis [data] and one of those is infections...the infections [are] when the services report that residents or clients develop respiratory infections, urinary infections, wound infections, or gastro. And then every month [we] look at those reports. [We] do a bit of analysis, if that one is higher this month in [a city, we] ask them for more information and then [we] report that to our care governance committee on a monthly basis. The reports are given to the regional manager [of this area]. Once a quarter [we] do a trending analysis. (Jana)

In the other organisations, infection surveillance was conducted in only one branch. The data was trended by a designated person for infection control. The infections were
reported using an infection surveillance form that was developed by the infection control person in the branch. One participant stated:

All the [home-visiting nurses] are informed that they have to bring back the results and notify about infection…The data was documented in [the wound infections register]…we have a folder that [we] use…[The infection control person would] trend those [monthly]… [The data then would be] interpreted … [and] trended [monthly] and then we put a copy into the folder. (Glene)

The infection surveillance reports were systemic within the organisation. The reports were communicated only to the staff within that branch, but not communicated to the head office. One participant stated:

Those results will be tabled at our clinical nurse monthly meeting...That information does not go back to the infection control committee. We do not feed that back to the major committee. It is only for this branch as far as I am aware. (Glene)

Consultation system

The system of consultation system with regard to infection control issues varied from organisation to organisation. Generally speaking, strategies included: (i) self-navigation; (ii) calling a specialised government resource, such as an infectious disease unit; (iii) consulting the infection control representative (if there was one); or (iv) to approach the branch manager, nurse manager, or nursing supervisor or designated clinical nurse consultants [CNCs]. The first method for consultation was self-navigation. Self-navigation was done by reading from the references that were provided within the policies and procedures. For any queries, the branch manager in one organisation reported that they would refer to the relevant legislation and standards, which were provided in the policies as references. They stated, “In the user guides, it then gives you, down the bottom, other places where you can actually go and get further information….they will point you in the direction of where to go to find out the information” (Kathryn). The second method of consultation was by calling a specialised government resource, such as infectious disease unit. One participant stated, “Sometimes…we will seek advice from the infectious disease [unit] and see what we needed to do. I would certainly be notifying [the senior nurse], but I could call them myself. Anybody can ring that number” (Lora). The third method of consultation was by consulting the infection control representative (if there was one). One participant mentioned, “[The infection control representative] is constantly reviewing wounds and giving advice on products and regimes… [their role] is more a consultancy role” (Glene). In other organisations, home-visiting nurses also to approached the branch
manager, nurse manager, or nursing supervisor or designated CNCs for consultation and advice. As reported by one participant:

If the [home-visiting nurses] are on the road and they have got a problem about anything, whether it’s an infection or anything else, their first point of call is just to ring the office and speak to the [CNC] or the [branch manager]…They are always in the office or contactable by mobile and if they are on leave, then there is always another nurse to take their position. (Julia)

The mechanism of consultation varied among organisations. For those organisations that had a designated infection control person in the branch, staff contacted this person for any infection control issues. The issue was referred to the infection control committee, if it required an expert experienced opinion, for discussion and to determine a solution. One participant provided an example as follows:

At the [Infection Control Committee] meeting, all [infection control representatives] will generally be asked…if [they] find something really that is a problem or concern or if the evidence is not supporting [the infection control policies]…and…it will get discussed on that level at the infection control meeting. (Glene)

In comparison, in those organisations that did not have a designated infection control person in the branch, the staff contacted the CNCs and branch manager for advice. If the issues required more experienced opinions, the branch manager would seek the advice of whoever was designated to look after infection control program matters in the head office. One participant provided an example as follows:

Say for argument’s sake we have an issue down here with the use of a ventricular shunt and I could not get any information anywhere. I would contact the [head of CBHVN services] and I say to them what should I do with this?…She will start to look for some information and then that [information] will come to me. (Kathryn)

Education on infection control

In all organisations, mandatory education about infection control practices was given to the staff once they were employed and then again annually. Infection control training usually included hand-hygiene competencies and self-learning packages. One participant said:

They will just do the hand-washing one, where they do the black light and germ gel in the branch. The other one for general infection control is that they read the [self-learning package] and then they answer the questions and then they hand it to the manager. (Jana)

The self-learning package covered areas including: hand hygiene, use of personal protective equipment (PPE), sharps management, immunisation, and management of exposure to blood and body fluids and needlestick injuries. As reported by one participant:
That [self-learning package] is very comprehensive…[It contains] hand hygiene, the use of the hand sanitiser, and then it guides you how to handle needlestick injuries and how to dispose of waste products and what you do if you have a spill of body products, how to clean it up. All of those come under that umbrella. (Ashly)

Clinical practices of the home-visiting nurses were assessed on a staff performance day where the HVN is accompanied by a senior nurse to assess their clinical practices. One participant stated:

When I started here, I went out with all the registered nurses…maybe for a week and a half and I watched [their] practice in the home and then [they] equally watched me and then reported back to the branch manager…so [they] watched my ability [to perform clinical tasks]. (Lora)

External resources were used for ongoing staff development such as inviting companies’ representatives to come to provide the staff with education sessions. One participant provided an example as follows:

My manager…arranges periodic training…whenever there is new techniques and new equipment is coming out to that the surgeons are using in the local hospitals, she usually books one of the representatives or books one of the clinical nurses from the hospital to come out and tell us how to do it properly. (Ashly)

Another way of providing ongoing staff development was by sending staff to conferences or training courses on requests and according to their interest. One of the participants stated:

We can really go to any education that we want to, you know if we want to go to a conference, we just apply and [the branch manager] virtually approves all the applications that we want to do. [The organisation] will always pay for the conference or the training and travel and accommodation. I have just been in a conference for three days…and that was all paid for and if it is training that we think that everybody is going to get benefit from, [and] and if it is running for a long time, we will try and send everybody to it. (Julia)

Generally, strategies of education included: face-to-face lectures, self-learning workbooks, and practical sessions. Infection control education was provided by infection control person in those organisations that had a designated one. In some organisation this role of education was integrated with the role of staff development officer, while in other organisations it was integrated with the branch manager role as reported in other literature (Felemban, 2014).

**Staff health**

All organisations encouraged their staff to maintain their health and immunity status. One of the participating organisation’s policy stated:

All persons who have physical contact with, or are involved in service delivery to the general public, should have current immunisation against Hepatitis B, Polio, Tetanus,
Whooping Cough, Diphtheria and Tuberculosis. If immunity is not current, the immunisation should occur within one month of employment or reasons for not doing so be presented by the staff person to the Workplace Health and Safety Officer. (Policy document_6_staff health)

Interestingly, home-visiting nurses were not required to provide any vaccination certificate or medical physical examination when they were initially employed. One participant commented:

The questionnaire [for their health status] that they complete does ask if they have any health issues or any infection control issues. It’s an honesty system. If they didn’t write it down, we are not going to know. We don’t even keep a record of who has had their vaccination and who has not. (Jane)

All of the organisations had policies and procedures about exposures to needlestick injuries and blood and body fluids. Exposures or suspected exposures were to be reported to, and followed up by, the branch manager. Influenza vaccinations were provided to home-visiting nurses and staff were encouraged to keep their immunity up-to-date as reported in other literature (Felemban, 2014)

Reporting and feedback mechanism

Common communication strategies for monitoring and managing infection control in all participating organisations included regular meetings, written communication in the form of memoranda, email and other electronic media, computer software and systems, and clients’ progress notes. Infection control issues such as policy updates and addressing issues related to infection control were discussed in the staff meetings. As reported by one participant, “[We have weekly staff meetings] where that information would sort of get discussed…So if something changes like hand-hygiene policies, then that would be put forward there so everybody had this information” (Glene). Memos to staff were used in some organisations for urgent matters as reported by one participant “If something that came through ad hoc, it could be on a daily basis, it might get to put on people desks…If there was something relevant, like say testing masks, for instance, we may send a memo around”. Emails were sent to the staff for any update or change in policies. One participant stated:

If there are any updates with any policies and procedures, the management send us an email with an updated one and I think that we have to sign to say that we have read it and we also will participate in mandatory training to keep us up-to-date with the practical. (Lora)

Computer systems were used in one organisation to communicate among home-visiting nurses. They have a program that was specific to their organisation where home-visiting
nurses can insert information about their clients and share it with each other. A participant described the computer system as follows:

> We have got [program] in our computers for all of our clients, so you can put a note in the computer and that sort of flags that on the database that this person’s wound is red or something or he’s got a cough or chest [infection] and that you have rung the general practitioner and made an appointment for them. So we talk to each other and let each other know what the situation is. (Mona)

Clients’ progress notes were used to communicate between home-visiting nurses about clients’ health status. One participant explained, “We also write in the progress notes in the client’s home too” (Mona).

**Mechanisms of monitoring infection control practices**

Generally, monitoring and evaluation strategies included: (i) clients’ feedback; (ii) annual staff performance; (iii) changing staff allocations; (iv) client incident reporting; (v) compliance with mandatory annual hand-hygiene training and annual infection control training, (vi) equipment audits; and (vii) audits of infection control programs.

Clients’ feedback was used as a strategy in two organisations to evaluate the compliance with basic infection control practices such as hand washing and wearing gloves. One participant reported:

> We….reassure clients that this is a protective measure put in place to keep them safe. So we tell them that they will see staff wearing gloves and they use them for every service delivery type that they do. So they are then aware. And if the staff member does not follow that standard, the client can report through that the staff member does not wear gloves, so we have had that feedback. (Jane)

In addition, annual staff appraisal was used in three organisations to monitor and evaluate infection control practices of the staff such as catheterisation and aseptic techniques. One participant reported:

> We have always done [staff performance] days so one of the clinical nurses would go out and do [staff performance] days to see how they interact with the client, how they do wound care, how they do paper work and all sort of stuff so they would actually watch how they spoke to the client and ensure there is a clean hand towel and all these sort of things. (Kathryn)

Another participant said, “The 12-month [performance] appraisal. [We would] certainly bring to light any issues that the nurse had or if the nurses were not following procedures or protocols, it would be brought up then” (Amal).
Another strategy to monitor infection control practices in one organisation was by changing the allocation of staff, which enabled identification of improper practices. A manager explained this strategy as follows:

The other way is that when we actually moved the staff around a bit in areas…having somebody else coming in. Not necessarily checking on people, but you hear the clients are aware how things differ so they might say, ‘Oh [X nurse] does not do it like that or [X nurse] uses this’. Then that will usually comeback to me if there is a concern. (Kathryn)

Auditing infection control equipment, such as gloves, apron, masks, cover shoes, disposable dressing kit and sharps containers, was another way used in one organisation to monitor that staff were utilising infection control equipment. One participant stated, “Every three months we have that audit and we would be looking at the nurses’ kit and the care workers’ bag to make sure that they are carrying what they should do for their personal protection” (Amal).

Incident reporting particularly, infection reports, was used to track and monitor infections among CBHVN services and following up staff compliance with mandatory infection control training were other strategies used by one organisation. One participant reported:

It is just the monthly monitoring of the incidence reports and also we monitor the compliance with mandatory training. We try and follow up with the service manager to make sure everybody had their annual infection control training. (Jana)

In one organisation, the infection control program audit was used by random number allocation. The results were then collated and sent to the head office for analysis. Following this, a report would be sent back to the branch manager to follow up any insufficient results or incidences of malpractice. One participant stated:

We do our major assessment or auditing process…twice a year…pretty much it is about 10 to 15 people that [the infection control representative] does the audit on individually. So [she] will just randomly pick people and [she] will go through the [audit form] with them. Then, that report gets collated and sent to the head office to the quality management specialist…and from that point, the feedback, I don’t know where it goes through from the head office. But when we [send] out in these reports they would probably come back down to the service manager and if there was something specific that we had, then we would address that from the local level looking at the root cause analysis of why that may have occurred. (Glene)

Evaluation and monitoring strategies for infection control varied from organisation to organisation. Common strategies used among all organisations were clients’ feedback, staff performance, and compliance with mandatory infection control training. Some organisations used other strategies as well, such as equipment audits, client incident reporting, and audits of infection control program.
Discussion

In this study, the governance and management of infection prevention and control program were largely informally structured. Responsibility for managing infection control in most of the participating organisations was usually integrated within the branch manager role or the quality improvement role. There was only one organisation that had a designated person to manage infection control matters within the CBHVN branch. The finding of this one organisation in this study was similar to Bellen (1996) which recommended that infection prevention and control program should be managed by an infection control nurse and Quality management department. Generally speaking, the responsibility for the management of infection prevention and control programs in CBHVN were not consistent with prevailing guidelines and policies. For example, Cruickshank and Murphy (2009) recommended that healthcare facilities should designate one infection control professional or multiple infection control professionals, depending on the healthcare facility’s size, complexity of the client cases and the infection risk of populations serviced. This designated person should be given the time, authority, and physical and financial resources to manage and coordinate the infection prevention and control program. Although it was identified that there should be a person designated to look after infection control, the limited resources sometimes make this difficult.

Friedman et al. (2008) recommended that the designated person should have skills, experience and qualifications in infection control and epidemiology and be able to develop, implement, coordinate and evaluate infection prevention and control program. In this study, findings revealed that none of the staff designated for infection control had skills, knowledge or qualifications in infection control. No study was found that examined the qualification of infection control professional in CBHVN.

Another role of infection control professionals was to work as an educator for clinicians (Friedman et al, 2008). Compared with recommendations from the literature, infection control education was provided to staff by infection control professionals in those organizations that had a staff member designated to infection control. In the other organizations this responsibility was integrated within the role of staff development officer or branch manager. Friedman et al. (2008) also argued that infection control professionals should provide expert opinion and guidance on infection control to other staff. In this study, only one organisation had a designated person for infection control to provide consultation to staff. In other organizations the staff would first contact the
CNCs to seek advice, then the branch manager. If the issue required expert opinion, then the matter would be referred through the branch manager to the next higher level, such as head of home care program or quality control department for discussion and to identify a solution. No previous study was found that examined the role of infection control professional in providing infection control education or consultation in CBHVN.

The available guidelines for infection control (Friedman et al, 2008; Cruickshank & Murphy, 2009) also recommended establishing an infection control committee that included members from different specialties to review and guide implementation of the infection prevention and control program, strategies and plans. The committee’s role is also to develop, implement and monitor the compliance with the infection prevention and control programs. However, one organisation established an infection control committee to manage infection control matters. The head of this committee reported information to the executive managers in the organisation’s head office such as. The committee’s role should be to assist in reviewing and updating policies and procedures for infection control, but the final decision about updating policies was made by a network of infection control experts in the organisation. One organisation reported reviewing the applicability of infection control policies to CBHVN by asking designated home-visiting nurses to provide feedback on the suitability of policies and procedures in the community-based nursing context. This finding was consistent with Herrick and Loos (1996) who proposed using an infection control committee to manage infection control, arguing that the advantage of a committee is that it will bring different expertise together and distribute the work over a number of people.

Particularly noteworthy was that the governance of infection prevention and control programs was silent on Standard 3 (ACSQHC, 2011) and other key policies (NHMRC, 2011). None of the participating organisations reported following Standard 3 for preventing and controlling HAIs. None of the organisations reported formal ICMPs to manage and coordinate infection control processes (CHRISP, 2010b). Infection control in CBHVN mainly depended on annual training and education of staff. The participating organisations, however, implemented some infection control policies and procedures to prevent HAIs and maintain client safety, such as hand hygiene, standard precautions, staff health and immunisation, processes after exposure to blood and body fluid, sharps management, and waste management which is consistent with the available
recommendations (Friedman et al., 2008; Hoy & Richmond, 2009; Cruickshank and Murphy, 2009; Swanson & Jeans, 2011; ACSQHC, 2011). Some of the issues relating to staff health were not addressed in the policies, for example work restrictions, assessment of staff allergies and pregnant staff. Some important infection control practices relating to client care were not addressed in some of the organisations’ policies, such as developing a protocol for aseptic techniques and using and managing invasive devices. This was not consistent with current recommendations, standards and policies (Cruickshank and Murphy, 2009; Hoy & Richmond, 2009; ACSQHC, 2011; Swanson & Jeans, 2011). Compared to Damani (2011) who argued that it is essential for every healthcare organisation to have an infection control manual, only one organisation had an infection control manual for CBHVN. The others integrated infection control policies with workplace health and safety or their quality management manual.

In this study, surveillance for HAIs was not standard practice in CBHVN. Practice within the CBHVN was not consistent with the current standard recommended to establish HAI surveillance systems to monitor and review current strategies for prevention and control of infection (Swanson & Jeans, 2011; ACSQHC, 2011). Surveillance was also not consistent with the standard recommended to use surveillance to identify better strategies to prevent infections and to ensure that surveillance findings, recommendations and policies are disseminated to the staff (Swanson & Jeans, 2011; ACSQHC, 2011). Only two organisations conducted HAIs surveillance activities. One of these organisations was reporting surveillance data to their head office department. Surveillance was not implemented in CBHVN due to a lack of resources and guidelines for surveillance systems in the community context and a lack of qualified staff in infection control (Felemban, 2014). The literatures are silent with regard how HAIs surveillance are currently implemented in CBHVN.

Available guidelines recommended regular reviews and evaluations of the effectiveness of the infection prevention and control program to improve the effectiveness of policies and protocols. Generally, infection prevention and control programs in CBHVN were monitored unsystematically. Evaluation strategies of infection prevention and control programs in the available guidelines included: reviewing infection control policies and procedures, contributing to performance improvement activities to promote a positive outcome for staff and clients, ensuring that risk management plans include infection prevention and control activities, and
conducting and participating in research and applying research findings into practice (ACSQHC, 2011; Friedman et al., 2008). Compared to the guidelines, the strategies for evaluating infection prevention and control programs in this study mainly depended on clients’ feedback. One organisation developed an infection control audit tool to evaluate infection prevention and control program in CBHVN. This tool included general knowledge about infection control and it was done only on a random number of home-visiting nurses. The report was then sent to the head office and collated with a report from other home care branches. Other strategies used to assist in evaluating home-visiting nurses’ knowledge and clinical practices included annual staff performance, equipment audit, client incident reports and compliance with mandatory annual hand-hygiene training and annual infection control training. Clients’ feedback is not considered accurate tool to evaluate an infection control program. The other tools mentioned, including the infection control audit tool, were used to assess the gaps in staff knowledge and assess the home-visiting nurses’ practices, but they do not necessarily provide accurate evaluation for an infection control program as a complete entity unless they are coordinated by an ICMP.

Case study is considered a strong research method when an holistic, in-depth analysis is required (Baxter, 2008). Case study methodology enables in-depth investigation that provides understanding of a complex phenomenon by describing the phenomena and exploring new issues and areas for development (Khon, 1977). Case study research enabled the researcher to explore the structure, processes and mechanism of evolution of infection prevention and control program including, the challenges of implementing of infection control practices in four different CBHVN organisations. Examining multiple organisations allowed an understanding of the differences and similarities between organisations and provided richer information and stronger general analytical conclusions. The use of multiple data collection sources in a triangulated manner in case study is considered a major strength of this approach (Merriam, 1998a). The use of three different resources in this research ensured data triangulation and gave a more detailed picture and more convincing conclusions about the structure and management of infection control in CBHVN. Although case study is considered an appropriate method to explore the phenomena of interest, there are limitations, such as lack of generalisability. However, case studies enable “analytic generalisation” rather than statistical generalisation.
This study was conducted only in four not-for-profit CBHVN organisations in southeast Queensland and was limited to the Australian context. However, the findings could inform studies in other CBHVN organisations. Future research could be conducted to develop standard guidelines for infection control that address challenges and issues of the community context. Also, future research could explore other issues related to the management and structure of infection prevention and control programs in a broader range of community contexts, such as countries with limited resources, and address those issues in the policies and guidelines.

Conclusion

In this study, the governance and management of infection prevention and control in CBHVN was largely unstructured and informal, and relied heavily on localized practice and custom. The ACSQHC Standard 3 for prevention and control of HAIs was not a feature in any of the organisations, and yet it is considered a requirement for every healthcare setting in Australia. The management structure for infection control varied according to the size of the organisations and the complexity of the provided services. Our study suggests that CBHVN organisations should review their infection prevention and control programs to ensure that they are consistent with the current guidelines and requirements.

The study findings suggest that none of the participating organisations had formally documented ICMPs to coordinate and implement infection control. In Queensland, each healthcare setting is required to have an ICMP to identify the infection risks at the facility and detail the measures to be taken to prevent or minimise the risks. Our study suggests developing an ICMP that is tailored to their services and context to ensure proper implementation of their infection and prevention program.

In this study, the responsibility for infection control in CBHVN organisations was usually assigned to people who did not have infection control experiences or were certified in infection control. Employing an infection control professional with the appropriate knowledge and experience may assist in more focused and professional management of infection prevention and control programs. Our study suggests that employing an infection control professional would create leadership for infection prevention and control program for the organisations and provide direction and expert opinion and develop, implement, review and evaluate ICMPs and infection control policies and procedures. Furthermore, establishing an infection control committee
would assist the infection control professional to collaboratively work with other specialties, serve as a communication network for feedback to the head office and provide expert opinion on the content of infection prevention and control programs. Our study also suggests employing a designated person for infection control in each CBHVN branch, depending on the size of the organisation, to serve as mentor, educator, advisor and role model to the other staff and to conduct the daily infection-control activities, such as HAIs surveillance. Conducting infection surveillance is important to provide significant information to identify risk factors and reduce the risk of infections. This person would also be a member of an infection control committee and act as a link between the CBHVN branch and the head office of the whole organisation.

Finally, the findings of the study suggest that evaluation of infection prevention and control programs in CBHVN lacks a systemic approach. Evaluation of infection control depended mainly on clients’ feedback, which is not considered a valid tool for evaluation infection prevention and control programs. Specific tools for evaluation of infection prevention and control programs in CBHVN are limited. Developing tools to evaluate infection prevention and control programs in CBHVN is essential to ensure high quality and safe healthcare services are provided.
<table>
<thead>
<tr>
<th>Accessed documents</th>
<th>Topic guide</th>
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| Infection control management documents | ICMP  
• Responsibility of infection prevention and control programs  
• Consultation processes  
• Staff accessibility to infection control manuals  
• Process of developing and evaluations IC manuals  
• Reports on infection control committee meetings  
• Infection prevention and control programs assessment tool for ICMPs  
• Infection control program evaluation and feedback reports  
• Evaluation reports and quality improvement plans |
| Infection control policies for client care including manuals | Hand hygiene  
• Standard precautions, transmission-based precautions and use of personal protective equipment  
• Provision of intravenous therapy  
• Infection control practices related to wound care, respiratory tract care and urinary tract care  
• Application of clean and sterile technique  
• Cleaning and disinfecting of medical equipment supplies and storage  
• Handling and transport of medical waste management and laboratory specimens  
• Needlestick injury  
• Risk management and hazard management  
• Management of needlestick injury  
• Management of blood and body fluid spills  
• Handling and disposing sharps  
• Using body and blood spill kit  
• Infection control equipment provided to staff |
| Surveillance system | Definitions for HAIs  
• HAIs Surveillance form  
• Statistical records for HAIs  
• Outbreak management plans  
• Process to monitor and analyses HAIs  
• Risk identification methods and quality improvement  
• Clinical forms related to infection control, such as infection notification forms, initial client assessment form for infections |
| Infection control education plan | Education materials related to infection control  
• Education plan  
• Topics included in orientation programs such as policies and procedures for client care role of surveillance in preventing infection and occupational health risks  
• Strategies to provide education |
| Occupational health | Initial assessment and health history  
• Confirmation of immunity and provision of vaccines  
• Initial and annual TB tests, as required  
• Identification of occupational exposure and follow-up of non-blood-borne pathogen exposure  
• Post-exposure prophylaxis for exposure to blood-borne pathogen  
• Exclusion from patient care activities  
• Surveillance for occupational health risks [risk and hazard management policy]  
• Follow-up with staff exposed to infectious disease. |
Table 2 – Interviews and focus groups guide for managers and home-visiting nurses

The interviews included the following topics:

- Ensuring safe healthcare services and organisational infection prevention and control programs
- Organisational management strategies for monitoring and evaluating infection prevention and control programs
- Policies and procedures are available for infection control
- Strategies to monitor compliance with infection prevention and control programs
- Surveillance system for HAIs
- Processes for notifiable diseases and included diseases
- Processes for employee health and occupational hazard
- Process of education or training in infection control
- Assessing employee’s competency with regard infection control practices
- Equipment related to infection control provided to staff
- Providing infection control consultation to employees
- Management of clinical wastes and sharps disposal
- Mechanisms for reporting any feedback to employees
- The role of client education in implementing infection prevention and control programs in CBHVN
- The role of the infection control professional in developing and implementing infection prevention and control programs
- Challenges of developing and infection prevention and control programs and plans in CBHVN
- The strategies used by home-visiting nurses to overcome the challenges of implementing infection prevention and control programs

Table 3 – Description of the four not-for-profit organisations

<table>
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<tr>
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<th>Wound care</th>
<th>Palliative care</th>
<th>Post-acute care</th>
<th>Personal care</th>
<th>Social support</th>
<th>Allied health services</th>
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<td>Aged care</td>
<td>Emergency relief and disability services</td>
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<td>Occupational therapists</td>
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<td>Physiotherapist</td>
<td>Mental health nurses</td>
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Table 4 – Demographic data of the participants

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**Paper 2: Infection control policies for client care in community-based home visiting nursing**

**Target Journal:** International Journal of Infection Control

**Abstract**

**Aim:** Providing care to patients and their families in community settings, in their home, is an important aspect of contemporary healthcare settings around the world. While advantageous in many ways, there are risks associated with community-based care, including healthcare-associated infection. An important well-established mitigator of risk in healthcare is the establishment and implementation of policy and procedures. There is limited research that what policies and procedures exist in community-case settings with respect to infection prevention and control, or how they operate. The aim of this paper is to explore the structure and processes of policy and procedure for infection prevention and control in community-based home visiting nursing, and how they operate.

**Methodology:** Exploratory case study research was conducted in four Community-Based Home Visiting Nursing organisations in southeast Queensland, Australia using data triangulation (document review, individual interviews and focus groups). Infection control documents were reviewed. Interviews and focus groups were conducted with (28) staff. Policies, procedures, processes and governance structures were explored. Data were analysed using the framework approach (Pope, Ziebland & Mays, 2000) to identify themes and six main elements for infection prevention and control programs were identified.

**Findings:** The findings showed that current infection control policies and procedures for client care included: hand hygiene, standard and transmission-based precautions, aseptic techniques, sharps disposal and prevention management of exposure to blood and body fluids. Some organisations had a manual for infection control, while in others infection control policies were integrated with workplace health and safety policies. Some of the infection control practices were not addressed in the policies including transporting and handling pathology specimens, catheterisation, and management of intravenous therapy. Some of the policies for infection control were not consistent with best practice due to challenges in the practice environment.
**Conclusion:** Infection control policies and procedures for client care should be tailored to address the challenges in the community context. Alternative strategies need to be developed for situations where resources are not available or appropriate.
Introduction

Infection prevention and control is a cornerstone of contemporary healthcare (Kenneley, 2010). Formal healthcare has traditionally been provided in hospital settings. However, in recent times healthcare has evolved and complex care is now often provided in community-based settings (Haiduven & Ferrol, 2004). As healthcare services extend into the community, so do Healthcare-associated infections (HAIs). Infection control policies and procedures are essential to prevent the transmission of HAIs for community-based home visiting nursing (CBHVN), particularly when providing invasive client-care procedures such as catheterisation, intravenous therapy and wound-care management (Rhinehart & McGoldrick, 2006). The rapid expansion of the CBHVN industry has meant that setting-specific standards required for providing high-quality and safe healthcare, such as those related to infection control, are underdeveloped (Friedman & Rhinehart, 2000). Existing research shows that infection control policies and procedures for client care in CBHVN are reliant mostly on standards developed for hospital setting (Rhinehart & McGoldrick, 2006). However, the community context is different from the acute settings context and the available infection control policies and procedures may not suit the challenges that occur in community settings.

There are various environmental challenges in the community context that should be considered when developing infection control policies and procedures for client care, such as a lack control of the environment, a lack of appropriate hand-washing facilities, unavailability of proper infection control equipment, and clients’ level of hygiene (Swanson & Jeans, 2011; Felemban, 2014). Rhinehart and McGoldrick (2006) asserted that infection control policies and procedures for client care should be practical, feasible, sensible, flexible and cost effective to ensure their implementation in the CBHVN context. Few guidelines provide recommendations for what infection control policies and procedures should be applied when providing client care in CBHVN (Rhinehart & Friedman, 1999; Damani, 2003; Rhinehart & McGoldrick, 2006; Hoy & Richmond, 2009; Swanson & Jeans, 2011; Civil, Demediuk, Kelly, Pak, Booth, & Jenningsm, 2014). There is little known about how infection control policies are applied in CBHVN and how feasible they are for the community context. It is also important to understand what actually happens in the community context and what the issues are, so that appropriate policies and procedures can be developed. This study
explored the current available policies and procedures for client care in CBHVN, and the challenges of implementing those policies.

**Methodology**

This study is a part of major case study investigating infection prevention and control programs in four CBHVN organisations in southeast Queensland, in Australia, the results of which are published elsewhere (Felemban, 2014). An exploratory case study approach and multiple-case design according to Yin (2009) was used to gain a holistic and deep understanding about the structure and processes of infection prevention and control programs in CBHVN. Donabedian’s framework (2005) was used to explore the structures of infection prevention and control programs (essential elements and policies); processes of infection prevention and control programs (management and implementation); and outcomes of infection prevention and control programs (surveillance and evaluation). Elements of best practice in infection control were identified from the literature and used to guide data collection. Triangulation of data sources was used: document review, individual interviews and focus groups. The researcher’s university and the participating organisations’ research ethics committee approved the study. Home-visiting nurses and managers of CBHVN services branches were invited to participate in the study.

Four not-for-profit CBHVN organisations participated in the main study. Descriptions of the organisations are provided in Table 3. Documents related to infection control were reviewed. A total of 28 staff participated in the study between September 2012 and December 2013. A total of 16 individual interviews were conducted. A total of 21 staff participated in three focus groups. The duration of each interview and focus group was between 45 and 60 minutes. Documents from each organisation related to infection control were reviewed to explore policies and the structures of infection prevention and control programs in each organisation and how they were expected to operate. Table 1 describes the types of documents reviewed and the checklist used to guide the review. Interviews with home-visiting nurses and managers were conducted to investigate their perspective on the structure and management of infection prevention and control programs and to explore issues related to applying infection control practices in a community context including, client-care policies to explore issues related to applying infection control practices in community context. A brief questionnaire also was used to collect participants’ demographic information (see Table 4).
The interview guide for managers included questions about infection control management including developing and evaluating mechanisms of infection control and client-care policies and procedures. The interview guide for home-visiting nurses explored their perspectives on how infection control policies and procedures for client care were implemented and issues relating to applying infection control in community context. Following cross-case analysis of data from all four organisations, focus groups with home-visiting nurses and follow-up interviews with managers were conducted to explore solutions for the issues raised from the document review and individual interviews. The topics included in interviews with home-visiting nurses and managers, and focus groups are described in (Table 2)

Data analysis

A framework approach (Pope, Ziebland & Mays, 2000) was used to guide data analysis and to link the emerging themes (elements) with the emerging theoretical (conceptual) framework. Notes taken from the document review, interviews and focus groups transcriptions were read. Six key elements for infection prevention and control programs were identified as follows: (i) governance of infection control (ii) infection control policies and procedures for client care (iii) staff development and training in infection control (iv) staff health and safety (v) surveillance systems (vi) environmental context. These six elements provided a conceptual framework (theoretical structure) for the findings of the four cases and the cross-case analysis. In this paper, the findings of one element, infection control policies for client care, are presented and discussed in detail.

Findings

All of the participating organisations had infection control policies and procedures for client care. In some of the organisations, the policies were provided in an infection control manual. One participant explained, “We have a manual and that is really our main source [for infection control policies]” (Glene). In other organisations, infection control policies were incorporated within the workplace and health safety policies in the quality manual. One participant reported:

…the safety component, it is within our work health and safety policy. There is a component in there around infection control. It is not [specifically] an outline[d] infection control [policy], but it does talk about utilising universal precautions and [it is]
our responsibility to keep ourselves safe and protecting clients. That is what I follow here at this site. (Jane)

Preventing transmission of infection during client care in CBHVN mainly depended on implementing standard precautions. One participant reported:

We would wear gloves, we have an apron, [and] we use aseptic techniques when we are doing wound care. So all our equipment is sterile that we use. We only use equipment that is single use. We do not reuse it after, and [we] wash [our] hands. (Lora)

The application of infection control policies varied from one organisation to another; however, there were some common policies among all organisations.

Hand-hygiene policies

Hand-hygiene policies in all organisations emphasised the importance of hand hygiene in preventing and controlling transmission of infections. One policy stated, “Hand hygiene is the single most important measure in preventing and controlling the spread of infection” (policy document 13_hand hygiene). Hand-hygiene policies were either integrated with standard precautions in some organisations or more detailed information on hand hygiene was provided in a separate workbook (policy document 14_hand hygiene guideline) or hand-hygiene training lectures were delivered (education document 4_hand washing). Hand-hygiene techniques were assessed in most organisations using a UV light and a glowing gel solution. Hand-hygiene assessment was performed at orientation and at annual infection control training. One participant reported, “[In the orientation] they will do the hand washing [assessment] so that where [we use] the black light and germ [glowing] gel in the branch [to assess their hand hygiene practices]” (Jana, M). Staff were provided with instructions about how to maintain hand integrity including checking of hands for skin integrity, covering skin breaks with waterproof dressings, and regular moisturising of hands (education document 3_Hand washing). Most organisations required home-visiting nurses to apply the World Health Organization’s Five Moments of Hand Hygiene procedure, which is considered current best practice. Participants reported that alcohol-based hand rubs gel was provided to home-visiting nurses in all organisations. One home-visiting nurse stated, “Hand sanitiser [is provided to us]” (Ann). Participants reported that they sometimes face issues with regard to hand washing. One participant stated, “Some of the [clients] don’t have adequate hand washing facility. They [have] got a very dirty sink, and the taps are dirty, and [they use a] cake of soap, [or] the same person or all the family are using the same towel” (RN). Another participant also said, “It’s hard
sometimes to always have the best practice when there is no running water” (Kathryn). Participants suggested some strategies to overcome these challenges such as using alcohol-based hand rubs and hands wipes.

**Standard and transmission-based precautions policies**

Participants from all organisations reported using standard precautions to minimise cross-infections among clients. One participant stated, “We have to wash our hands…with our procedures we have to be aseptic and sterile where that is indicated in our practice, depending on what we are doing” (Sara). It was mentioned in the policies that home-visiting nurses are required to use, “standard precautions…to minimise the risk of the spread of infection by treating all blood and body fluids as potentially infectious” (education document 2_standard precaution). The standard precautions included:

- Good hand-hygiene practices, use of personal protective equipment, respiratory hygiene and hand etiquette, aseptic technique, safe use and disposal of sharps, routine environmental cleaning and spill management, appropriate handling of linens, waste management and reprocessing of any reusable equipment and instrument. (policy document 13_standard precautions)

Personal protective equipment (PPE) was provided to home-visiting nurses in all organisations. It was stated in one organisation’s policy that the management should, “Ensure staff are given the PPE guidelines and ensure the availability of PPE all the time” (policy document 11_PPE). One participant stated that the organisation provided them with the following PPE, “goggles, gloves, apron, booties, [and] hand sanitiser. We have got sterile gloves as well. So, depending on what procedure we are doing, [or] if we actually need sterile gloves” (Ann).

Information on transmission-based precautions were provided in the policies. Generally, the policies were more focused on application of the transmission-based precautions in aged-care facilities. Only one organisation’s policies provided instructions on implementing the transmission-based precautions in clients’ homes after consultation with the manager or the assigned infection control personnel. Participants reported that controlling the environment in a client’s home was difficult. One participant mentioned:

I just know that within community we can follow all the training that we have been provided…we can follow [the standards]…but at the end of the day when you have a
compliant client, it works. But if you [have] a non-compliant client, it does not matter what we do…we will never have any say in the matter, because it is their home. (Jane)

Aseptic technique policies

Instructions on aseptic techniques were provided in some organisations’ policies. The aseptic non-touch technique was defined as a “precaution designed to prevent undue contamination of person, object, or area by microorganism…The aseptic technique must be applied consistently and conscientiously” (policy document 14_aseptic technique). Descriptions of standard and surgical aseptic techniques and examples of each technique was provided by two organisations (policy document 14_aseptic technique). In other organisations, information on the aseptic technique was not provided and home-visiting nurses were advised to follow the manufacturer’s instructions for each product. One participant said, “I just go to the manufacturer’s [instructions] and follow the policy and the procedures that they recommend” (Ashly).

Sharps policies

Sharps policies in most of the organisations provided instructions about how to dispose of sharps in sharps container. Policies indicated that all staff should be educated on the safe handling, use and disposal of sharps in the community (policy document 13_sharps management). In a community setting, the minimum standard of disposing sharps was, “in a rigid-walled, puncture-resistant container that is sealed and securely closed. The container could then disposed of in the general waste stream or preferably in a community sharps disposal facility, depending on the local council’s guidelines” (policy document 13_sharps management). Some of the locations where a sharps container can be disposed of were provided in the policies, such as at the local pharmacy, in a public disposal bin, in a public hospital, at needle and syringe program and via a residential collection service. This is only applied to containers holding up to ten (1 ml) syringes and needles (policy document 13_sharps management). The process of disposing of the sharps container varied from organisation to another. In two organisations, participants reported that for regular usage of sharps, they were allowed to transport sharps container with them back to the CBHVN branch for disposal. One participant mentioned, “We…supply sharp boxes [to the] client we are visiting. We would dispose of [sharps] in there…if they get full…we bring them back [to the branch] and we can put them into the sharp waste bin with a lock on it” (Lora). Two organisations did not allow home-visiting nurses to transport any sharps in their
vehicles. Thus, home-visiting nurses asked the clients to dispose of the sharps container in their normal garbage, when they were full (as per the city councils’ regulation). One participant said:

[Sharps containers] can be thrown into the normal rubbish and that is acceptable from the council. My staff have access to a sharps container and once they use it, it will stay in the client’s home and that can go into the normal bin. (Kathryn)

Another organisation asked the clients or their relatives to take the sharps container to a general practice clinic or pharmacy for disposal. One participant said, “When [the sharps container] is at its limit…we seal it up and we get the client to dispose of it, whether through their pharmacy, the doctor’s surgery…We do not carry sharps” (Jane). For a one-off emergency usage of sharps, the sharps container was disposed in the clients’ regular garbage after it was placed in a sealed hard container (as per city councils’ regulation). One participant provided an example:

If [the home-visiting nurse] used a needle…and it was just one, she would ask the client [if] there is a plastic milk container or a jar and she will put [the sharp] in there and screw it up, and then it will go to the normal rubbish…We do not carry sharps in our cars. We do not carry any waste in our cars. We don’t bring them back from [clients’] home[s]. (Kathryn)

If the home-visiting nurses had a sharps container with them and they were allowed to transport sharps in the vehicle, they would then use the sharps container and bring it back to the CBHVN branch for disposal in a large sharps container located in the CBHVN branch. As stated by one participant, “For sharps, [home-visiting nurses] should have in their bags a sharps container and then…they bring it back to [the branch for disposal]” (Jana). Participants reported that, on some occasions, they did not have a sharps container with them and they had to recap the needle to be able to throw it in the garbage or bring it back with them to the office for disposal. One participant provided an example:

It’s very rare [for it] to happen. On this weekend we had a new lady admitted…She did not have a sharps container and I didn’t have one to give her. So the clexane actually comes with a rubber cap and it’s not very safe of course to [recap]. But you put it back on [that’s] better than chuck[ing] it in the bin the way it is. (RN)

*Exposure to blood/ body fluid and spill management policies*

Guidelines for blood and body fluid spills management aimed to, “provide a basis for developing and maintaining and implementing local safe work instructions for [the employees] who handle blood and body fluid or maybe exposed to blood and body
fluid” (policy document 9_overview). The procedures included the use of standard precautions, the basic principles of blood and body fluid spills management, the equipment used in cleaning a spill, appropriate handling and disposal of contaminated wastes (policy document 9_blood and body fluid spill management). Appropriate procedures for handling and disposing of sharps and details on cleaning procedures for the spill according to its size (spots, small or large) were also illustrated (policy document 9_blood and body fluid spill management).

Clinical waste

Clinical waste was disposed of according to the local regulation of the city council in each organisation. Participants reported that the regulation allowed them to dispose of clinical waste in the normal garage after it was double bagged. One participant reported:

For infectious waste...they would double bag it and put it in the general waste. There was a guideline that came out form the Department of Health and Aging on infection control practices or something like that, so all our policies and procedures were created from there. (Jana)

If the clinical waste contained chemotherapy, then it had to be put in a special purple bag before it was disposed in the normal garbage. One participant said:

The only time any clinical waste maybe is different is if somebody’s on chemotherapy, and we have special bags in their house. They still go in the normal waste, but it’s got to be sure that it is definitely contained. They are purple bags. (Lora)

For those organisations that do not have access to the purple bags, the disposal process was arranged with the hospital that was responsible for treating the client. One participant explained:

What normally what would happen is if we got a referral from the hospital and they would say Mr [X] has a chronic leg ulcer and…we started him on cytotoxic therapy…We will say ok, because we don’t have access to it, you will need to provide him with the appropriate purple bins and purple liners etc. [Then] they just contact…and organise all the pick-ups. (Kathryn)

Specimen collection and transportation policies

Specimen collection was not a routine practice for home-visiting nurses. Clients were usually referred to their general practitioner (GP) or a pathology company for specimen collection. However, participants reported that in some circumstances when the client was unable to move from home, home-visiting nurses volunteered to transfer specimens such as wound swabs or urine specimens to the GP clinic. One participant stated:
If it is difficult for them to get to the doctors, I pick up the swab and take that sample and give it to the carers to bring back to the lab. So it is not a standard thing, but it might happen in circumstances where it is very difficult for that client to get to the doctor with mobility. It depends on client circumstances for transport and mobility. (Sara)

One participant reported that their organisation provided them with the specimen collection equipment, such as a special containers or sealed plastic bags to transfer specimens as follows:

We have got all the [specimen collection] equipment here in the office. We would not keep it with us, so if we know that one of the wounds is a bit infected, generally we will come back and grab [the wound swab]...I will drop it to pathology immediately after I finish. (Ann)

Instructions on specimen collection and transportation were provided in the infection control policies of one organisation. Instruction included: educating staff about the collection and handling of specimens, collect the specimen in a safe manner, correctly labelled the specimen and place in a leak-proof container, organise delivery services if required such as a pathology courier. Instructions on safety measures of transporting the specimen was provided in the policies for the staff who is going to transport the specimen such as, the specimen must be “separated from the driver’s compartment, bagged and contained in secure leak-proof bag, properly restrained to prevent movement, with a spill kit available in the vehicle, and the specimens not left in the direct light” (policy document 13_management of specimen).

Client education

Client education assisted home-visiting nurses to apply infection control practices in clients’ homes. Participants reported that it was important for the client to understand that home-visiting nurses were required to perform infection control practices to protect them from acquiring infections. Moreover, client understanding about basic infection control practices, such as hand hygiene and cleaning the environment, assisted in improving their hygiene level. For example, clients became more compliant with performing hand hygiene for themselves, as reported by one participant:

I have found that community nursing can be very effective in infection control as long as the clients are compliant. If you have the client on board it makes everything a lot easier…Absolutely, client awareness is definitely a big issue; I would say definitely. (Mary)
Policies on client education were not usually provided as a standard policy in CBHVN settings. One organisation encouraged client education. It was stated in the policies that clients and their families should be encouraged to wash their hands and be provided with appropriate means and information on hand hygiene (policy document 13_consumer health). “Clients and [their families] should be familiarised with infection control strategies…by providing them [with] posters, printed materials and educational videos” (policy document 13_consumer health). Educating clients and their families may assist in preventing infection and reducing cross contamination.

Policies review and assessment

Systematic review and assessment of policy for their suitability to community context was performed in two organisations. In the first organisation, the quality manager asked the branch manager to nominate one home-visiting nurse to provide their feedback on the policies as follows:

We have a central policy review group, and what we do with that is we will ask for representation from each area. So we will usually contact the [branch manager] and say, ‘Who in your service would like to represent you in the review of the infection control policy?’ [The branch manager] will usually point us to someone who has an interest in infection control. So then we will contract that person and ask for their feedback on the policy. (Jana)

In the second organisation, any issues relating to infection control policies were discussed in regular committee meetings. One participant explained:

At our meeting…we will generally be asked if there is anything in [the policy] that is not current. And, along the way, if we find something really that is a problem or concern or if the evidence is not supporting what they are doing in there, we generally could send them an email prior to the meeting taking place and they will get it put on the agenda. And then, generally, it will get discussed at that level at the infection control meeting…and then from that point, whoever chairing the committee would take it back to the head office [and] also discuss that with the relevant people who might be involved in making decisions around [the raised issue such as updating policy]. (Glene)

Although different strategies were used to ensure applicability of infection control policies to the context, participants reported that policies were not always applicable in the community context. One participant said, “They have sort of been modified a little for the community, but it’s more [for] hospital or [aged-care] residential facilities. They probably need to be reviewed and have community specific policies” (Ann). There are still challenges for implementing those policies as reported in other literature.

Discussion

The findings revealed that the structures in which the infection control policies and procedures for CBHVN are presented varied among the participated organisations.
Only one organisation had a specific infection control manual. In the other organisations, policies were integrated with workplace health and safety or quality management manual. This was not always consistent with available guidelines, which recommend that each healthcare setting should establish a manual that includes standards for infection control practices (Damani, 2003). Placing all infection control policies and procedures in one manual would assist staff to more easily access policies and find information they require and save time. There was no study found that examined how infection control policies and procedures are structured in CBHVN. The findings of this study suggested that although policies and procedures were reviewed for their applicability for the CBHVN context in some organisations, home visiting nurses still faced challenges implementing practices in the community context. Rhinehart and McGoldrick (2006) asserted that policies should be flexible and reasonable to be implemented in the CBHVN context. Reviewing policies is important to ensure they are appropriate to the context.

In this study, the findings showed that all CBHVN organisations had a policies and procedure for infection control. However, some important infection control policies related to client care were not addressed in some organisations, such as policies relating the criteria for application of clean and sterile techniques. Another example is policies relating to management of invasive procedures such as, urinary catheterisation, infusion therapy, and respiratory therapy. Processes of insertion, removing invasive equipment and strategies to reduce HAIs related to invasive procedures was provided. The guidelines recommended to include such topics within the policies and procedures of infection control on CBHVN (JCAHO, 2004b; Rhinehart & McGoldrick, 2006; Swanson & Jeans, 2011; Civil et al., 2014; Rhinehart & Friedman, 1999c). There was no research found that discussed the current implemented infection control policies in CBHVN. Providing policies on these practices is important for determining an organisation’s infection control standards with regard to those practices and for addressing contextual challenges.

The findings revealed that although policies on sharps management and disposal were available, these policies did not always address the challenges in the community context. Participants reported that they sometimes found themselves with difficult choices and that they engaged in dangerous practices such as recapping the needle. Moreover, organisations that asked their clients to transport and dispose of their own
sharps containers did not provide alternative solutions if the client was not able to move or transport the sharps container themselves. Policies for safety procedures for transporting sharps where organisations allowed staff to transport sharps were not always provided. These practices are not consistent with current guidelines that recommend providing policies on safety handling and transporting sharps (Rhinehart & McGoldrick, 2006; Swanson & Jeans, 2011; Civil et al., 2014). There was no study found that examined the applicability of sharps policies to the CBHVN context. Reviewing sharps management policies for safety measures during the transportation of sharps in a community context is important to ensure staff safety.

Findings showed that handling and transporting specimens were not standard practice in the community context. However, participants reported that they occasionally volunteered to collect and transport specimens to GPs’ offices or pathology laboratories if clients were not able to do it themselves. Policies on safe handling and transporting these specimens was not always provided in the infection control policies. This is not consistent with the guidelines, which recommended to include safe handling and transporting of pathology specimens in infection control policies (Rhinehart & McGoldrick, 2006). There was no study found that discussed the policies and procedures of specimen collection and transportation in CBHVN.

In this study, client education played a major role in assisting home-visiting nurses to apply infection control practices in their clients’ home environments. Client education increased clients’ cooperation and compliance with providing a clean environment for clinical practices. Also, educating clients improved client compliance with clinicians’ recommendations about their personal and environmental hygiene, which lead to better infection control practices. The research is silent with regard to the role of client education in implementing infection control practices in CBHVN.

Case study is considered a strong research method when an holistic, in-depth analysis is required (Baxter, 2008). Case study methodology enables in-depth investigation that provides understanding of a complex phenomenon by describing the phenomena and exploring new issues and areas for development (Khon, 1977). Case study enabled the researcher to explore the structure and processes and mechanism of evaluation of infection prevention and control programs including, the challenges of implementing of infection control practices in four different CBHVN organisations. Examining multiple organisations allowed an understanding of the differences and similarities between organisations and provided richer information and stronger general
analytical conclusions. The use of multiple data collection sources in a triangulated manner in case study is considered a major strength of this approach (Merriam, 1998a). The use of data triangulation gave a more detailed picture and more convincing conclusions about the policies and practices of infection control for client care and the challenges of infection control in CBHVN. Although case study is considered a good method to explore areas about which little is known, it has limitations, such as lack of generalisability. However, case studies enable “analytic generalisation”, rather than statistical generalisation.

This study was only conducted in four not-for-profit CBHVN organisations in southeast Queensland and was limited to the Australian context. However, the findings could inform studies in other CBHVN organisations. Future research could investigate the applicability of infection control policies in the community context to develop standard guidelines that addresses challenges and issues of the community nursing context. Also, future research could explore other issues related to implementing infection control policies for client care in a broader range of community contexts, such as countries with limited resources, and address these issues in the policies and guidelines.

**Implications**

The findings of this study suggest that home-visiting nurses face challenges with regard to sharps disposal and transportation policies in CBHVN. Alternative strategies for sharps disposal should be considered within organisational policies, especially for those clients who cannot transport sharps themselves to appropriate disposal areas and when the organisation’s policy do not allow staff to transport sharps in their vehicles.

Our study revealed that client education assisted in applying infection control practices in clients’ homes. Developing a policy around client education and providing clients with education materials about infection control, such as small booklets or brochures to remind them of the importance of hand hygiene, environmental hygiene and personal hygiene or wound management, would be useful to help them understand and cooperate with community clinicians in minimising infections in the community context. The findings suggests that client education is essential in CBHVN for achieving a better working environment for home-visiting nurses and better healthcare
results for clients. Implementing policies on client education and providing them with materials may assist in implementing infection control measures in community setting.

The study uncovered a remarkable findings that infection control policies were not always practical for application in the CBHVN context. Our study suggests reviewing policies for their feasibility for the community context may assist in adopting polices to address the challenges that home-visiting nurses face in the community context and assist in getting suggestions on alternative strategies that could be used when some resources are not available or are not appropriate. More research is required to develop strategies to assess and evaluate policies and procedures to ensure their applicability and effectiveness to the community context.

Conclusion

Infection control policies and procedures for client care are an important element of any infection control program. Infection control policies and procedures provide home-visiting nurses with standard best practices. Policies should be flexible and applicable to the community context, and address the specific challenges of the community context.
### Table 1– Type of accessed infection control documents

<table>
<thead>
<tr>
<th>Accessed documents</th>
<th>Topic guide</th>
</tr>
</thead>
</table>
| **Infection control management documents** | • ICMP  
• Responsibility of infection prevention and control programs  
• Consultation processes  
• Staff accessibility to infection control manuals  
• Process of developing and evaluations IC manuals  
• Reports on infection control committee meetings  
• Infection prevention and control programs assessment tool for ICMPs  
• Infection control program evaluation and feedback reports  
• Evaluation reports and quality improvement plans |
| **Infection control policies for client care including manuals** | • Hand hygiene  
• Standard precautions, transmission-based precautions and use of personal protective equipment  
• Provision of intravenous therapy  
• Infection control practices related to wound care, respiratory tract care and urinary tract care  
• Application of clean and sterile technique  
• Cleaning and disinfecting of medical equipment supplies and storage  
• Handling and transport of medical waste management and laboratory specimens  
• Needlestick injury  
• Risk management and hazard management  
• Management of needlestick injury  
• Management of blood and body fluid spills  
• Handling and disposing sharps  
• Using body and blood spill kit  
• Infection control equipment provided to staff |
| **Surveillance system** | • Definitions for HAIs  
• HAIs Surveillance form  
• Statistical records for HAIs  
• Outbreak management plans  
• Process to monitor and analyses HAIs  
• Risk identification methods and quality improvement  
• Clinical forms related to infection control, such as infection notification forms, initial client assessment form for infections |
| **Infection control education plan** | • Education materials related to infection control  
• Education plan  
• Topics included in orientation programs such as policies and procedures for client care role of surveillance in preventing infection and occupational health risks  
• Strategies to provide education |
| **Occupational health** | • Initial assessment and health history  
• Confirmation of immunity and provision of vaccines  
• Initial and annual TB tests, as required  
• Identification of occupational exposure and follow-up of non-blood-borne pathogen exposure  
• Post-exposure prophylaxis for exposure to blood-borne pathogen  
• Exclusion from patient care activities  
• Surveillance for occupational health risks [risk and hazard management policy]  
• Follow-up with staff exposed to infectious disease |
Table 2 – Interviews and focus groups guide for managers and home-visiting nurses

The interviews included the following topics:

- Ensuring safe healthcare services and organisational infection prevention and control programs
- Organisational management strategies for monitoring and evaluating infection prevention and control
- Policies and procedures are available for infection control
- Strategies to monitor compliance with infection prevention and control programs
- Surveillance system for HAIs
- Processes for notifiable diseases and included diseases
- Processes for employee health and occupational hazard
- Process of education or training in infection control
- Assessing employee’s competency with regard infection control practices
- Equipment related to infection control provided to staff
- Providing infection control consultation to employees
- Management of clinical wastes and sharps disposal
- Mechanisms for reporting any feedback to employees
- The role of client education in implementing infection prevention and control programs in CBHV
- The role of the infection control professional in developing and implementing infection prevention and control programs
- Challenges of developing and infection prevention and control programs and plans in CBHV
- The strategies used by home-visiting nurses to overcome the challenges of implementing infection prevention and control programs

Table 3 – Description of the four not-for-profit organisations

<table>
<thead>
<tr>
<th>Services provided by the organisations</th>
<th>Wound care</th>
<th>Palliative care</th>
<th>Post-acute care</th>
<th>Personal care</th>
<th>Social support</th>
<th>Allied health services</th>
</tr>
</thead>
<tbody>
<tr>
<td>Staff qualifications</td>
<td>Youth services</td>
<td>Counselling</td>
<td>Aged care</td>
<td>Emergency relief and disability services</td>
<td></td>
<td></td>
</tr>
<tr>
<td>The organisations employed various types of specialties including:</td>
<td>Registered nurses</td>
<td>Disability support</td>
<td>Occupational therapists</td>
<td>Personal carer</td>
<td>Physiotherapist</td>
<td>Mental health nurses</td>
</tr>
</tbody>
</table>

Table 4 – Demographic data of the participants

<table>
<thead>
<tr>
<th>Participants (n=28)</th>
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<tbody>
<tr>
<td><strong>Age (years)</strong></td>
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<tr>
<td></td>
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<tr>
<td><strong>Gender</strong></td>
</tr>
<tr>
<td>Female</td>
</tr>
<tr>
<td>Male</td>
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<tr>
<td><strong>Experience in CBHV</strong></td>
</tr>
<tr>
<td>1–15 years</td>
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<tr>
<td>16–31 years</td>
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<tr>
<td>32–46 years</td>
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<tr>
<td><strong>Highest qualifications</strong></td>
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<tr>
<td>Diploma degree</td>
</tr>
<tr>
<td>Bachelor degree</td>
</tr>
<tr>
<td>Master degree</td>
</tr>
<tr>
<td>Others</td>
</tr>
<tr>
<td><strong>Current job</strong></td>
</tr>
<tr>
<td>RN</td>
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<tr>
<td>EEN</td>
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<tr>
<td>Managers</td>
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**Paper 3: Infection control education programs for community-based home visiting nursing: An Australian Study**

**Target Journal:** British Journal of Community Nursing

**Abstract**

**Aim:** Advances in science and research and changing epidemiology of disease in recent years have led to healthcare innovation and change. Care traditionally provided in hospital is being increasingly devolved to community settings. In doing, so to do the risk associated with the delivery of that care, such as healthcare-associated infection. In order to meet with these contemporary challenges healthcare professional require contemporary education and professional development. Little is known about the education structures and processes with respect to infection prevention and control in community-based home visiting nursing. This study explored education structures and processes with respect to infection prevention and control in community-based home visiting nursing, and the challenges associated with practice.

**Methodology:** An exploratory case study was conducted in four community-based home visiting nursing organisations in southeast Queensland, Australia using data triangulation (document review, individual interviews and focus groups). Infection control documents were reviewed. Interviews and focus groups were conducted with (28) staff. Data were analysed using the framework approach (Pope, Ziebland & Mays, 2000) to identify themes and six main elements for infection prevention and control programs were identified.

**Findings:** In this study, education programs in community-based home visiting nursing did not always address infection control practices related to the community context for example, the following topics were included: hand hygiene, standard precautions, transmission-based precautions, managing blood and body fluid spills, managing blood or body fluid exposure, and instructions on what to do in the event of an accident or incident. However, information on some of important infection control aspects were not included in orientation topics, such as the role of surveillance in preventing infections and handling and transporting laboratory specimens. Limited tools were available to assess infection control practices of home visiting nurses in the community context,
especially clinical practices. Responsibility for infection control education was often integrated with other staff roles.

**Conclusion:** Comprehensive education programs that address infection control issues in community-based home visiting nursing are required. Developing tools to assess the clinical practices of home visiting nurses may assist in evaluating the effectiveness of education programs and identifying innovative infection control strategies that are applicable to the community context. A qualified person with a proper knowledge of infection control should be assigned to infection control education.
Introduction

Generally speaking, formal healthcare has traditionally been provided in hospital settings. However, healthcare has evolved in recent times and complex care is increasingly provided in community settings (Haiduven & Ferrol, 2004). Community-based home visiting nursing (CBHVN) has become a major provider of healthcare (Javris, 2001). Patients are discharged home with central lines and other in-dwelling catheters, complicated and chronic wounds, and intravenous lines for medications (Kralik & Van Loon, 2011) and receive care by home-visiting nurses (Felemban, St John & Shaban, 2012). Healthcare-associated infections (HAIs) are a risk whenever healthcare is provided (Kralik & Van Loon, 2011). HAIs are generally related to inappropriate client care practices (Haely & Garner, 1986). Lack of knowledge can cause poor adherence to infection control practices (Swanson & Jeans, 2011). This lack of knowledge may negatively impact on transmission of HAIs. Thus, structuring appropriate infection control education programs for home-visiting nurses is crucial to ensuring implementation of an effective infection control strategy, reducing transmission of infections, and enhancing client outcomes.

Home-visiting nurses are independent and often work alone when providing care in clients’ homes. Thus, infection control education is essential so that home-visiting nurses can understand their role in preventing the transmission of infection and apply correct practices when delivering healthcare (Elliott, 2012). Gilmore (2011) recommended that education programs should be planned according to the adult-learning style principles to stimulate and motivate behavioural change. Civil et al. (2014) recommend that the structure of education should include staff orientation and induction and continue training and development as new information comes to light. Rhinehart and Friedman (1999b) asserted that this structure enhanced behavioural change, a powerful tool in infection control (Joint Commission on Accreditation of Healthcare Organizations [JCAHO], 2004b). Hinson (1983) recommended that infection control education should concentrate on selecting useful knowledge in infection control that enables staff to apply it into clinical practice. Swanson and Jeans (2011) recommended that ongoing training should update staff with new scientific innovations in the area of infection control, for example learning new knowledge and skills in hand hygiene. Rhinehart and Friedman (1999) suggested some criteria for selecting topics for ongoing training, such as: case discussions, newly implemented
policies with infection control implementation, new client services with infection control implications, report surveillance findings, newly implemented infection control strategies, and case discussion. Rhinehart and Friedman (1999) asserted that monitoring and evaluating education on infection control is important to ensure its effectiveness.

The rapid expansion of the home healthcare industry has meant that the recommendations and guidelines about managing, structuring, monitoring and evaluating infection control education are underdeveloped (Friedman & Rhinehart, 2000). Current guidelines for CBHVN are reliant mostly on hospital standards (Rhinehart & McGoldrick, 2006). Many of the existing studies of infection prevention and control programs in CBHVN suggest that staff education and ongoing development is one of the essential elements for effective infection prevention and control programs in the community setting (Rice & Jordan, 1992; Bennett, 1994; Herrick & Loos, 1996; Bellen, 1996; Swanson & Jeans, 2011). However, not many studies discuss how available guidelines of infection control education are applied in the community context. The aim of this study was to explore the structure of infection control education and processes used to provide education in CBHVN, to understand how they are structured and function, and also to explore for areas for improvement.

Methodology

This study is a part of major case study investigating infection prevention and control programs in four CBHVN organisations in southeast Queensland, in Australia, the results of which are published elsewhere (Felemban, 2014). An exploratory case study approach and multiple-case design according to Yin (2009) was used to gain a holistic and deep understanding about the structure and processes of infection prevention and control in CBHVN. Donabedian’s framework (2005) was used to explore the structures of infection prevention and control programs (essential elements and policies); processes of infection prevention and control programs (management and implementation) and outcomes of infection prevention and control programs (surveillance and evaluation). Elements of best practice in infection control were identified from the literature and used to guide data collection. Triangulation of data sources was used: document review, individual interviews and focus groups. The researcher’s university and the participating organisations’ research ethics committee
approved the study. Home visiting nurses and managers of CBHVN services branches were invited to participate in the study.

Four not-for-profit CBHVN organisations participated in the main study. Descriptions of the organisations are provided in Table 3. A total of 28 staff participated in the study between September 2012 and December 2013. A total of 16 individual interviews were conducted. A total of 21 staff participated in three focus groups. The duration of each interview and focus groups was between 45 and 60 minutes. Documents from each organisation that related to infection control were reviewed to explore policies and the structures of infection prevention and control programs in each organisation and how they were expected to operate. Table 1 describes the types of documents reviewed and the checklist used to guide the review. Interviews with home-visiting nurses and managers were conducted to investigate their perspectives on the structure and management of infection prevention and control programs and to explore issues related to applying infection control practices in a community context including education program. A brief questionnaire also was used to collect participants’ demographic information (see table 4).

The interview guide for managers included questions about infection control management including developing and evaluating mechanisms for infection control education programs. The interview guide for home-visiting nurses explored their perspectives on how the infection control education programs were implemented and issues related to applying infection control in the community context. Following cross-case analysis of data from all four organisations, focus groups with home-visiting nurses and follow-up interviews with managers were conducted to explore solutions for the issues raised from the document review and individual interviews. The topics included in the interviews with home-visiting nurses and managers and focus groups which are described in (Table 2)

Data analysis

A framework approach (Pope, Ziebland & Mays, 2000) was used to guide data analysis and to link the emerging themes (elements) with the emerging theoretical (conceptual) framework. Notes taken from the document review, interviews and focus groups transcriptions were analysed. Six key elements for infection prevention and control programs were identified as follows: (i) governance of infection control (ii)
infection control policies for client care (iii) staff development and training in infection control (iv) staff health and safety (v) surveillance systems (vi) the environmental context. These six elements provided a conceptual framework (theoretical structure) for the findings of the four cases and the cross-case analysis. In this paper, the findings of one element, staff development and training in infection control, are presented and discussed in detail.

Findings

Governance and responsibility of infection control education

A key feature among three participating CBHVNs was that they depended mainly on education and staff training for implementing infection control in CBHVNs. One participant said, “[We do] not have a specific [infection control] program as such within the community setting… basically [it depends on] a mandatory [infection control] training that we do every year” (Kathryn). Another participant said, “The only infection control program we have is mandatory and we do it once a year. It is part of our work health and safety…the infection control program that it is run here is very basic” (Amal). Another participant said, “So we do have [it as] a part of our mandatory training. We do provide the infection control training. We do hand washing competencies” (Jane). Infection control education was one of the element of the structured infection prevention and control program in one participating organisation.

Infection control education materials were generally provided by the head office of all the organisations, including self-learning packages, lectures, and practical skills competency checklists. Responsibility for providing infection control education varied according to each organisation’s policies. It was integrated within the branch manager’s role in two organisations, while it was the role of a designated person for infection control on another organisation. In another organisations, it was the responsibility of the education officer. The structure, processes and outcomes of education within the infection control program is explained next.

Structure of infection control education

Overall, the structure of infection control education in all organisations included two main components: orientation programs, and ongoing staff training. The timing, content, and strategies used to deliver education in each component are explained separately.
Processes of infection control education

Orientation programs

The orientation programs of all participating organisations included two theoretical parts (cognitive) and a practical assessment (psychomotor skill). The strategies used for theoretical information included: self-learning package and lectures. The strategies used for practical assessment included: hand hygiene competencies and staff performance assessment. The content and strategies used for infection control in orientation programs are discussed next.

Self-learning package (cognitive)

All participating organisations used self-learning packages as a process to introduce general information on infection control policies and procedures to newly employed staff, and then repeated this training annually. Some organisations used online electronic self-learning packages, while others used hard copies self-learning packages. The content of self-learning packages mainly included information on basic infection control practices such as hand hygiene, use of personal protective equipment (PPE), sharps management, spill management, waste management, and management of exposure to blood and body fluids. One participant described the infection control training provided by her organisation as follows, “At orientation…we have to do an [infection control] workbook, which gives [us] all the standards and policies and procedures” (Mary).

Infection control lecture (cognitive)

Another strategy used for education was providing infection control lectures to newly employed staff. Two organisations used this strategy. A lecture was provided once during the orientation process in one organisation. In another organisation, an infection control lecture was given during orientation, and then annually. The contents of the lecture varied between these organisations. Reviewing the infection control lecture of one organisation showed that it was mainly about hand hygiene. The lecture was given to the staff by a registered nurse on site. The manager of the organisation noted, “One of the registered nurses must take [the infection control class]...there are four of us…we alternate” (Jane). In the other organisation, the lecture included a brief overview of infection control practices and outlined some policies and procedures such
as the importance of infection control, common types of infections in the community setting, modes of transmission, chains of infection, standard and transmission-based precautions, hand hygiene, PPE, linen management, waste management, sharps handling and disposal, spills management, managing exposure, staff personal hygiene, gloves usage, and cytotoxic medication (education document 6_infection control lecture). Lectures were prepared by the education departments within the head offices of both of these organisations.

**Staff performance assessment (psychomotor skills)**

Three of the participating organisations undertook psychomotor skills assessments for staff. Clinicians’ clinical practices were assessed on a performance assessment day where a newly employed home-visiting nurse was accompanied by another experienced home-visiting nurse to assess their clinical practices. Participants reported that performance assessment days were used at the beginning of employment to ensure staff competency to perform clinical tasks and to ensure that their ability to provide care to clients was to the organisations’ standards. Then performance assessment days were repeated for staff every 6–12 months to ensure competency and to pick up gaps in their clinical practices and assist them with any education they required. One participant described:

> What happens is, a minimum of twice a year, the staff have an [assessment] day that is done by the [clinical nurses]. They will go out with [home-visiting nurses]… and it’s seen as a beneficial day for both sides, because [clinical nurses] can see what [home-visiting nurses] will do and [home-visiting nurses] can also pick their brains about stuff if they have any issues. They do the assessments one-on-one. (Kathryn)

Another participant said:

> We also have yearly or twice a yearly [assessment] visits where our clinical nurses comes out and watch us for two days and assesses our practice and then give us a written report about our progress and if there is any areas that we need to improve or if we are doing very well with them. (Mary)

**Hand hygiene competency (psychomotor skills)**

All organisations employed hand hygiene competency. Three organisations used hand glow lotion and ultraviolet light to assess hand-hygiene practices. One participant said, “For the hand hygiene…all employees…get tested in their hand washing technique with the black light and the germ gel” (Jana). Most of the organisations performed the hand-hygiene assessment annually for all clinicians. One participant said, “Everyone has to do that one annually” (Glene). Hand-hygiene competency was performed in the branch office. One participant reported, “The hand-hygiene training was done in the
facility, not in the patient’s house…everybody will do it in the bathroom here” (Glene). However, in one organisation, participants reported that the hand-hygiene assessments were performed in clients’ houses during the staff performance appraisal. They said, “[Clinical nurses] will also [observe] hand-washing [technique], because [it] is no good [to do it in the branch]… So, we will [assess the hand-washing techniques] in the home as well…just to make sure that they do the appropriate [technique]” (Kathryn).

**Ongoing staff development and training**

The second component of infection control education was ongoing staff development and training. The strategies used included an education calendar, external resources, courses and conferences, staff safety meetings and informal education. Each of these strategies are described next.

**Education calendar**

An education calendar was used to plan different educational topics for the staff, including infection control topics. This strategy was used in two organisations. The education calendar formed the skeleton of the education plan. In one organisation, the education calendar was prepared by a learning and development person who was allocated to the site. The process of planning the education calendar every year was as follows:

[The learning and development person] sits with [the manager] towards the end of the year and [they] go through performance evaluation and people raise whatever idea they want, such as things that they want to achieve [in] the next 12 months. [They] collate that and try to implement it through our education calendar. Plus [the] mandatories [trainings are] implemented in [the calendar] as well. (Jane)

In the other organisations, topics for the education calendar were organised by the branch manager. The process of choosing elective topics was decided from staff requests or from issues that clinical nurse consultants might have picked up as issues from staff performance appraisals. One participant reported:

If the staff requested [a topic] we will put that in our draft training program. And then on top of that, when the staff do a support day and they have their appraisal, you ask the staff, ‘What is it you would like to have more information on? Where do you feel that we need to educate you more?’ And so we will use that [information] and incorporate it into the plan. (Kathryn)

Another way to select topics was to ask the staff in the regular staff meetings if they have any topics that they would like to learn more about. One participant said,
“The nurse manager...at the [staff] meeting asks the staff if there is any particular area that they want to have training in” (Julia).

**External resources**

External resources were used for ongoing staff development in three organisations, including two strategies: inviting companies’ representatives to provide staff with education sessions, or sending staff to conferences or training courses on their request and according to their interests. For the first strategy, if the staff requested to be educated on topics related to infection control, the nurse manager would coordinate with external sources of expertise whenever it was possible. An example provided by a participant was: “If there is equipment and we don’t know about it, we would request our manager to arrange with the company to come out, yeah definitely” (Ann). Another strategy was to call other sites and try to obtain information about their experiences. One of the participants stated:

> If there is a new client that has come on board with a condition or a wound or something that none of us have ever seen before, we would call around the other sites and we might need some extra training as well from other sites. We support each other. (Ann)

Another strategy was to send staff to training courses and conferences. Participants mentioned that their manager would arrange for them to go to education courses, for example wound management courses. One participant reported, “We do send people out [to courses]. Last year...I went...to a wound care four-day course” (Jane). One of the participants similarly stated, “I went...last year for three days to a conference [on] wound care. I have been to another couple of wound care conferences; just half days or a day” (Ann). One of the participants also stated that they sent their staff to conferences:

> We can really go to any education that we want to. You know, if we want to go to a conference, we just apply and [the branch manager] virtually approves all the applications that we want to do. [The organisation] will always pay for the conference or the training and travel and accommodation. I have just been to a conference for three days...and that was all paid for...and if it is a training that we think that everybody is going to get benefit from, [and] if it is running for a long time, we will try and send everybody to it. (Julia)

When staff had external education, they came back and provided an overview of that training course to the other members of the branch. The branch manager said:

> When the staff go on training for whatever it is they are going to do, they are expected to come back and give an education session to the other staff. So, depending on what it is, they will come back and do a 15-minute to half an hour presentation to the staff. (Kathryn)
Another organisation had an agreement with a wound dressing product company to educate staff about wound management. She stated:

For wound care, we have an agreement with [wound dressing product company] and they provide us with education for our services every year. They do our wound stuff really. [The wound product company] runs a conference twice a year and our staff have free access to that conference if they want to go. It’s purely wound management. (Jana)

Staff safety meetings

Another strategy was using staff safety meetings as a way to increase awareness about different safety topics, as well as to brainstorm ideas on how to deal with an issue using a best-practice approach. This strategy was used by one organisation. The manager explained:

[In] the safety meeting…we get our workplace health and safety team to develop some of the key hot topics or issues that we are finding at the site…and the whole idea of [this meeting] tool box is to generate a discussion among the care group, to get them thinking about what is good practice, what are we currently doing, what we need to change, that sort of things. So that is the whole idea — to raise awareness. (Jane)

The manager provided an example about infection control topics that were chosen by the safety box tool:

Last year we did some outbreak management training. Staff raised concerns through a meeting about swine flu and what if they were exposed to it, ‘We have families. What about us?’ So we utilised our DVDs and we [did] small group training. (Jane)

Informal education

Informal education was used by two organisations. Informal infection control education was undertaken either by a designated person for infection control after visiting a client’s home with an home-visiting nurse or by a branch manager during the performance assessment day. The supervisors would identify issues related to infection control while observing staff clinical practice during client visits. Then the issue would be addressed individually or generally depending on the type of issue. One manager stated that she provided informal education when she went with staff to review clinical practices, “We do raise awareness through practical assessments and working alongside them. [It is not] written down; it is training that I provide” (Jane). Another one explained the process of informal education as follows:

[I] would be…observing and if I picked up on something, then I will be educating about that point, rather than documenting it... I will watch what they are doing with their hand-hygiene technique and I would really look at what products we have got there, whether they are available. As I said, we like soap to be available in the client’s house. So, generally, I would do that basically when we go to do a joint visit in the
client’s house and see what’s happening in there… generally, I would pick up individually what people might have problem with, I will identify [the issue]... and then I will address it individually if that was the case. (Glene)

Outcomes management mechanisms

The evaluation of infection control education program depended mainly on three strategies: a short test provided at the end of the self-learning package, review of hand-hygiene competencies, and staff performance assessments. The first strategy included providing home-visiting nurses with a short test at the end of the self-leaning package. This was to assess knowledge (cognitive) of home-visiting nurses and how much they had absorbed from the self-learning package. This strategy was used by all participating organisations. The home-visiting nurses were required to answer the whole quiz correctly to pass. This test was performed along with the self-learning package, which were done initially when the home-visiting nurse was employed and then annually. One participant explained:

At orientation…We have to do an [infection control] workbook, which gives [us] all the standards and policies and procedures and then its got a quiz at the end and you have to answer the questions and you have to pass. And if you don’t, then they follow up and you have to pass it. (Mary)

The second and third strategies were to assess staff practical (psychomotor skills) and their ability to apply that knowledge in practice. Hand-hygiene competency tests were used by all participating organisations. The processes of this strategy were explained in the orientation program. Assessment of staff performance was used in three participating organisations. This strategy was used to ensure that home-visiting nurses were competent to perform clinical practices according to the organisation’s standards and to identify any gaps in knowledge and address them.

Discussion

The findings of this study showed that responsibility for providing infection control education varied. Only one organisation had a designated person for infection control who managed infection control issues in the CBHVN branch, including conducting annual education sessions and reviewing competencies. In other organisations, responsibility of infection control education was integrated within the role of the branch manager or education officer, who were not specifically certified or experienced in infection control. This was not always consistent with available guidelines, which recommend employing a knowledgeable and certified person in infection control to facilitate infection control education and training and to act as a resource for staff (Rhinehart & Friedman, 1999b; Ward, 1995). Ward (1995) suggested
that the role of this person should be to communicate information to staff, develop strategies to motivate staff to put their infection control knowledge into practice and to monitor staff compliance with infection control practices, as well as to measure the outcomes of education programs and improve compliance and quality in staff practices. Although it was identified that there should be a person designated to look after infection control, the tight resources sometimes make this difficult. There was no research found that examined the role of the infection control professional in providing infection control education in CBHV.

In this study, the structure and timing of infection control education of all the participating CBHV organisations included initial mandatory orientation for infection control for newly employed staff and ongoing infection control training afterwards. This approach was consistent with the available guidelines, which recommend that staff should receive an orientation on infection control when they are first employed and then ongoing education and training (Rhinehart & Friedman, 1999; JCAHO, 2004b; Rhinehart & McGoldrick, 2006; Civil et al., 2014).

The content of infection control orientation in all organisations covered the principles of infection prevention and control such as hand hygiene, standard precautions, transmission-based precautions, managing blood and body fluid spills, managing blood or body fluid exposure, principles of environmental cleaning and reprocessing medical equipment (if the organisation was reusing equipment), and instructions on what to do in the event of an accident or incident. However, information on some of important infection control aspects were not included in orientation topics, such as role the of surveillance in preventing infections and handling and transporting laboratory specimens, which is not consistent with available recommendations (Gilmore, 2011; Swanson & Jeans, 2011; Rhinehart & Friedman, 1999; JCAHO, 2004b; Civil, et al., 2014).

As for ongoing infection control training, topics for education in most of the participating organisations were selected according to staff interest and requirements. For example, managers would ask their staff to suggest topics or sometimes they would address gaps in knowledge that were identified from clinical assessments or newly implemented policy or clinical devices. This approach was consistent with the available recommendations by Rhinehart and Friedman (1999). However, some topics were not
properly addressed in ongoing training, such as reporting infection surveillance findings and assessing risk reduction activities. The reason for that was because infection surveillance was not always officially conducted in CBHV. Surveillance activities in CBHV is discussed in more detail elsewhere (Felemban, 2014).

The study findings showed that different strategies and resources were used for infection control education processes in CBHV. The strategies used included theory (cognitive) and practical (psychomotor skills) components. The strategies used for the theory component included lectures, face-to-face conversations, and self-learning. Different combinations of those strategies were used according to the local education plan and resources of each organisation. The strategies used for practical components included assessment of staff performance and hand-hygiene competencies. These strategies were applied in all the participating organisations. Several strategies were used to provide ongoing training, such as inviting company representatives to provide training sessions on newly implemented devices or new wound dressing products, and sending staff to attend wound dressing conferences and training courses. These findings were consistent with Rhinehart and Friedman (1999), who recommended that various innovative strategies should be used when providing education to cover the needs of all healthcare workers. However, some initiatives, such as sharing recently published studies relating to infection control practices in CBHV among staff, were not actively used. There was no studies found that examined how infection control education program are structured and implemented in CBHV.

The outcomes of infection control education was monitored and measured by various strategies in CBHV. Cognitive knowledge was measured by exams after theory components of training. Exams included questions about infection control policies and procedures in the organisation. The tests were administered in both paper form or online depending on the local policy and resources of the organisation. This strategy was consistent with Ward (1995) study, where staff knowledge was assessed using a paper-based tools or e-learning package (Desai, Philpott-Howard, Wade & Casewell, 2000; Clarke, Martin, 2002). Both of these tools which were found in the literature contained a series of questions related to infection control practices in everyday clinical practice. The tools were scored and staff with a low score would undertake more study to improve their practice (Ward, 1995).

Psychomotor skills were assessed by performing annual hand-hygiene competencies and undertaking an assessment of staff performance every six months.
This strategy was consistent with recommended available guidelines, which suggest checking staff competency at orientation and ongoing auditing and education for all staff thereafter, maintaining a register of staff training and staff competencies achieved for infection control practices (Gilmore, 2011; Rhinehart & Friedman, 1999; Civil, et al., 2014), and identifying gaps in knowledge to assess the effectiveness of educational interventions. The research is silent with regard to how staff performance and compliance with infection control practices are assessed and evaluated in CBHVN.

Hand-hygiene competency assessments were performed in CBHVN branches, which are considered to be controlled environments and may not reflect the home-care context. An audit tool was developed by Felemban, St John and Shaban (2012) to assess hand-hygiene practices for home-visiting nurses in CBHVN. The tool was based on the WHO Five Moments of Hand Hygiene (2014b), but modified to suit CBHVN context. However, the tool was only used on small-scale sample and needs to be evaluated in larger-scale studies to test the validity of the tool. No other published studies were found that investigated hand-hygiene practices.

Staff performance assessment days were used to assess staff’s clinical competency to perform different clinical practices, including wound dressings and aseptic techniques. This assessment was time consuming and was only done twice a year. Further, one-off assessments may not reflect the staffs’ actual practice in a CBHVN context. There were no related studies in the previous literature to compare with these findings. Formal recommendations and studies on how to evaluate infection control education in CBHVN, especially clinical practices, are scarce.

An important finding was that most of the organisations mainly depended on staff education for implementing infection control in the community context. While important, an effective infection control program should consist of many different elements, and staff education and ongoing development is only one of those elements (Swanson & Jeans, 2011; Hoy & Richmond, 2009; Rice & Jordan, 1992; Bennett, 1994). Thus, infection control education should be part of a comprehensive program.

Case study is considered a strong research method when an holistic, in-depth analysis is required (Baxter, 2008). Case study methodology enables in-depth investigation that provides understanding of a complex phenomenon, by describing the phenomena and exploring new issues and areas for development (Khon, 1977). Case
study enabled the researchers to explore structure, processes and mechanism of evaluation of infection prevention and control programs including, the challenges of implementing of infection control education in four different CBHVN organisations. Examining multiple organisations allowed understanding of the differences and similarities between organisations and provided richer information and stronger general analytical conclusions. The use of multiple data collection sources in a triangulated manner in case study is considered a major strength of this approach (Merriam, 1998b). The use of three different resources in this research ensured data triangulation and gave more detailed picture and more convincing conclusions about the education of infection control in CBHVN. Although case study is considered a good method to explore there are limitations, such as lack of generalisability. However, case studies enable “analytic generalisation” rather than statistical generalisation.

This study was conducted only in four not-for-profit CBHVN organisations in southeast Queensland and was limited to the Australian context. However, findings could inform studies in other CBHV organisations. Future research could investigate the applicability of infection control education programs in the community context to develop a program that addresses context-related topics and issues. Also, future research could explore other issues related to infection control education in a broader range of community contexts, such as in countries with limited resources, and address those issues in the policies and guidelines.

**Implications**

The findings of the study showed that the responsibility for infection control education was usually assigned to staff who were not certified, or formally qualified in infection control. Our study suggests employing a knowledgeable person who is certified or qualified in infection control, or has previous clinical experience and a background in infection control to oversee infection control issues in the CBHVN branch. This person should be responsible for providing infection control education and sharing updated infection control knowledge among staff and to help in assessing staff competencies.

It was interesting to find that active strategies such as sharing recently published studies that are related to infection control was not always utilised. Sharing updated information with home-visiting nurses may encourage staff to apply contemporary infection control practices. Our study suggests encouraging staff to explore recent
research related to infection control in CBHVN to keep up-to-date with current evidence-based practices.

An important finding of this study is that evaluating the outcomes of education programs on staff clinical practices could be developed further. Limited tools were applicable for community context. Further, currently used strategies for evaluating staff competencies may not reflect what is actually happening on a daily basis. Our study suggests conducting more research to explore appropriate strategies to assess clinical practices in a community context and to develop assessment tools that are applicable to the community context.

For the cases in this study, implementing infection control relied heavily on staff education and development. Results from our study suggest it may be important to for CBHVN organisations to review the structures of their infection prevention and control programs to ensure that they comprehensively cover all the essential elements required, rather than depending so heavily primarily on education processes.

**Conclusion**

Staff education is crucial for implementing effective infection control strategies to prevent the transmission of infections and improve client outcomes. Education programs in CBHVN should be comprehensive, evidence-based and evaluated to ensure they are effective. Future research is required to explore strategies to evaluate and assess the efficacy of current education programs and to develop innovative tools for assessment of staff competencies that are applicable to the community context.
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<td>• Confirmation of immunity and provision of vaccines</td>
</tr>
<tr>
<td></td>
<td>• Initial and annual TB tests, as required</td>
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<tr>
<td></td>
<td>• Identification of occupational exposure and follow-up of non-blood-borne pathogen exposure</td>
</tr>
<tr>
<td></td>
<td>• Post-exposure prophylaxis for exposure to blood-borne pathogen</td>
</tr>
<tr>
<td></td>
<td>• Exclusion from patient care activities</td>
</tr>
<tr>
<td></td>
<td>• Surveillance for occupational health risks [risk and hazard management policy]</td>
</tr>
<tr>
<td></td>
<td>• Follow-up with staff exposed to infectious disease.</td>
</tr>
</tbody>
</table>
Table 2 – Interviews and focus groups guide for managers and home-visiting nurses

<table>
<thead>
<tr>
<th>The interviews included the following topics:</th>
</tr>
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<tbody>
<tr>
<td>• Ensuring safe healthcare services and organisational infection prevention and control programs</td>
</tr>
<tr>
<td>• Organisational management strategies for monitoring and evaluating infection prevention and control programs</td>
</tr>
<tr>
<td>• Policies and procedures are available for infection control</td>
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<tr>
<td>• Strategies to monitor compliance with infection prevention and control programs</td>
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<tr>
<td>• Surveillance system for HAIs</td>
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<tr>
<td>• Processes for notifiable diseases and included diseases</td>
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<tr>
<td>• Processes for employee health and occupational hazard</td>
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<tr>
<td>• Process of education or training in infection control</td>
</tr>
<tr>
<td>• Assessing employee’s competency with regard infection control practices</td>
</tr>
<tr>
<td>• Equipment related to infection control provided to staff</td>
</tr>
<tr>
<td>• Providing infection control consultation to employees</td>
</tr>
<tr>
<td>• Management of clinical wastes and sharps disposal</td>
</tr>
<tr>
<td>• Mechanisms for reporting any feedback to employees</td>
</tr>
<tr>
<td>• The role of client education in implementing infection prevention and control programs in CBHVN</td>
</tr>
<tr>
<td>• The role of the infection control professional in developing and implementing infection prevention and control programs</td>
</tr>
<tr>
<td>• Challenges of developing and infection prevention and control programs and plans in CBHVN</td>
</tr>
<tr>
<td>• The strategies used by home-visiting nurses to overcome the challenges of implementing infection prevention and control programs</td>
</tr>
</tbody>
</table>

Table 3 – Description of the four not-for-profit organisations

<table>
<thead>
<tr>
<th>Services provided by the organisations</th>
<th>Wound care</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Palliative care</td>
</tr>
<tr>
<td></td>
<td>Post-acute care</td>
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<tr>
<td></td>
<td>Personal care</td>
</tr>
<tr>
<td></td>
<td>Social support</td>
</tr>
<tr>
<td></td>
<td>Allied health services</td>
</tr>
<tr>
<td>Staff qualifications</td>
<td>Youth services</td>
</tr>
<tr>
<td></td>
<td>Counselling</td>
</tr>
<tr>
<td></td>
<td>Aged care</td>
</tr>
<tr>
<td></td>
<td>Emergency relief and disability services</td>
</tr>
<tr>
<td>The organisations employed various types of specialties including:</td>
<td>Registered nurses</td>
</tr>
<tr>
<td></td>
<td>Disability support</td>
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<tr>
<td></td>
<td>Occupational therapists</td>
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<tr>
<td></td>
<td>Personal carer</td>
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<tr>
<td></td>
<td>Physiotherapist</td>
</tr>
<tr>
<td></td>
<td>Mental health nurses</td>
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</tbody>
</table>

Table 4 – Demographic data of the participants

<table>
<thead>
<tr>
<th>Participants (n=28)</th>
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</thead>
<tbody>
<tr>
<td>Age (years)</td>
</tr>
<tr>
<td>18–42</td>
</tr>
<tr>
<td>43–66</td>
</tr>
<tr>
<td>Gender</td>
</tr>
<tr>
<td>Female</td>
</tr>
<tr>
<td>Male</td>
</tr>
<tr>
<td>Experience in CBHVN</td>
</tr>
<tr>
<td>1–15 years</td>
</tr>
<tr>
<td>16–31 years</td>
</tr>
<tr>
<td>32–46 years</td>
</tr>
<tr>
<td>Highest qualifications</td>
</tr>
<tr>
<td>Diploma degree</td>
</tr>
<tr>
<td>Bachelor degree</td>
</tr>
<tr>
<td>Master degree</td>
</tr>
<tr>
<td>Others</td>
</tr>
<tr>
<td>Current job</td>
</tr>
<tr>
<td>RN</td>
</tr>
<tr>
<td>EEN</td>
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<tr>
<td>Managers</td>
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Paper 4: Staff health and safety in community-based home visiting nursing


Abstract

Aim: Despite advances in health and medical research, emerging and re-emerging infectious diseases continue to be a global burden. Staff health services are vital to protect the health and welfare of healthcare workers, patients and the community from infection, in particular healthcare-associated infection, in both hospital and community settings. Healthcare workers sustain sharps injuries and occupational exposures. Recent documented deaths of medical and nursing officers from Middle East Respiratory Syndrome Coronavirus and Ebola in the United Arab Emirates and Africa, where community models of care operate, highlight the real risks. Little is known, however, about how staff health services with respect to infection prevention and control operate in community-based healthcare settings are structured, or operate. This paper explores how staff health services within infection prevention and control programs in community-based home visiting nursing organisations in Australia are currently structured, and operate.

Methodology: An exploratory case study was conducted in four Community-Based Home Visiting Nursing (CBHVN) organisations in southeast Queensland, Australia using data triangulation (document review, individual interviews and focus groups). Infection control documents within each organisation were reviewed. Interviews and focus groups were conducted with 28 staff. Structure and processes of staff health were explored. Data were analysed using the framework approach (Pope, Ziebland & Mays, 2000) to identify themes and six main elements for infection prevention and control programs were identified.

Findings: In this study, staff health structures and processes in CBHVN generally included health status, immunisation and management of exposure to blood and body fluid. Other issues as client health, pregnant staff, and staff allergies, work restrictions and outbreak management were not addressed in some CBHVN organisations. Sharps disposal and the transportation of pathology samples in occasional circumstances was identified as a particularly problematic for home-visiting nurses, as well as managing patients with particular communicable diseases. Some dangerous practices were reportedly performed by home-visiting nurses, such as recapping in some circumstances.
where sharps containers are not available. Home-visiting nurses were not always provided with the appropriate safety equipment to transport pathology samples in CBHVN.

**Conclusion**: Staff health programs in the community context should include all the essential components for staff health, such as pregnant staff, staff allergies, and staff with infections, pre-employment health assessment such as recording past infectious diseases history, immunisation records, factors that may increase risk of infection transmission, staff allergies and a physical examination to determine baseline data about the staff for surveillance purposes, and to identify staff with medical health issues related to the use of recommended personal protective equipment (PPE). Sharps disposal and transportation of pathology samples in community setting should be addressed in the policies to ensure staff safety.
Introduction

An effective infection prevention and control program is an important element for providing safe and quality healthcare services. Staff health services are vital to protect the health and welfare of staff and clients, especially with an increase in burden of infectious diseases, including HIV, Hepatitis B, and Hepatitis C (Haiduven & Ferrol, 2004). The occupational safety and health administration [OSHA] (1991) estimate that each year around 250–300 clinicians die of occupational-acquired Hepatitis B. In 1997, The Center for Disease Control and Prevention (CDC) (1997) indicated that 52 clinicians have acquired HIV by exposure to occupational risk such as needlestick injuries. It was estimated that approximately 800,000 sharps injuries occur annually among 6–8 million clinicians in US (National Institute for Occupational Safety and Health, 1999). Haiduven & Ferrol (2004) conducted a retrospective study to calculate the rate of exposure incidents and needlestick injuries among three home care organisations. The findings of the study showed that among 52 incidents, community nurses were involved in 48 injuries and 12 exposure incidents. Clients’ health status was recorded, 20 were HIV positive, 1 was Hepatitis B positive and 1 was Hepatitis C positive. Sepkowitz and Eisenberg (2005) estimated that the annual death rate for healthcare workers from occupational risks, including infections, was 17–57 per 1 million workers. The risk for occupationally acquired Hepatitis B virus is mostly from exposures to patients with chronic HBV infection (Schillie, et al., 2013). The CDC reported that 18,800 new cases of acquired- occupational-acquired Hepatitis B occurred in 2011 (Schillie, et al., 2013). Although there is little known about the actual risk and incidence of occupationally acquired diseases in home care services, home-visiting nurses encounter comparable hazards to their hospital colleagues and maybe more because they work in uncontrollable, unpredictable, and less standard environments (Felemban, 2014).

Staff who work in direct client care are at risk of occupational hazards and exposure to infectious diseases (Swanson & Jeans, 2011; Hoy & Richmond, 2009). In September 2012 a new infection Middle East Respiratory Syndrome Coronavirus (MERS-CoV) emerged in Saudi Arabia and was responsible for the deaths of medical, nursing and paramedic personnel in Jeddah (Zaki, Boheemen, Bestebroer, Osterhaus & Fouchier, 2012; MOHKSA, 2014; WHO, 2014c). In 2014, endemic Ebola re-emerged in Sierra Leone and Guinea reemerged, killing medical and nursing personnel and infected international healthcare workers, of which at least one was evacuated to the US.
for treatment (Gatherer, 2014; WHO, 2014a). These are but a few contemporary examples of the risk of emerging and re-emerging infections that threaten the health and welfare of healthcare professionals, particularly in community-care settings where primary care is the only form of care delivered. Comprehensive staff health services are important for effective infection prevention and control. Attention to occupational health has increased as infection prevention and control programs developed. In 1991, The OSHA (1991) published the blood pathogen standard that required organisations to have stringent exposure-control plans and staff health safety as a part of agency accreditation. The Joint Commission on Accreditation of Healthcare Organizations (2004b) emphasised it is essential for each healthcare setting to have policies and procedures in place to protect the health of their staff, such as having policies in place when employees do no report for work and providing vaccination to staff. The Australian Commission on Safety and Quality in Healthcare (2012) developed the National Safety and Quality Improvement Health Service Standards (NSQHS), of which there are ten. Standard 3 aims to prevent and control Healthcare-associated infections (HAIs). The Commission also developed guidelines for this standard. The guidelines recommended that the occupational health and safety program should include: communicable diseases status, occupational management and prophylaxis, work restrictions, and assessment of staff occupational allergies.

In 2014, the Royal Australian College of General Practitioners published the document *Infection Prevention and Control Standards* that provided standards for general practice and other office-based and community-based practices with respect to infection prevention and control (Civil, Demediuk, Kelly, Pak, Booth, & Jennings, 2014). The document includes guidelines on five areas of infection control, one being the health of staff. The processes highlighted in the document included: immune-compromised staff, staff with infections, pregnant health professionals, exposure to infectious diseases, vaccination, staff records, additional vaccinations, and managing blood and body fluid spills. It was noted that the information in the document was intended for use as a general guide only. Information may or may not be relevant to particular practices or circumstances such as CBHV. Consultation should be made with appropriate professionals to tailor the standard to particular circumstances. Much of the guidelines’ information about staff health recommend how staff health services should be structured and function in a community setting. However, little is known
about how staff health services are currently structured and implemented in CBHVN services and how they are implemented, especially because home-care settings presents many challenges that are comparable, but different to hospital settings. This paper explores how staff health services are structured and operated in CBHVN in Australia.

Methodology

This study is a part of major case study investigating infection prevention and control program in four CBHVN organisations in southeast Queensland, Australia. (Felemban, 2014). An exploratory case study approach and multiple-case design according to Yin (2009) was used to gain a holistic and deep understanding about the structure and processes of infection prevention and control program in CBHVN. Donabedian’s framework (2005) was used to explore the structures of infection prevention and control programs (essential elements and policies), processes of infection prevention and control programs (management and implementation) and outcomes of infection prevention and control programs (surveillance and evaluation). Elements of best practice in infection control were identified from the literature and used to guide data collection. Triangulation of data sources was used: document review, individual interviews and focus groups. The researchers’ university and the participating organisations’ research ethics committee approved the study. Home-visiting nurse and managers of CBHVN services branches were invited to participate in the study.

Four not-for-profit CBHVN organisations participated in the main study. Descriptions of the organisations are provided in Table 3. Documents related to infection control were reviewed. A total of 28 staff participated in the study between September 2012 and December 2013. A total of 16 individual interviews were conducted. A total of 21 staff participated in three focus groups. The duration of each interview and focus groups was between 45 and 60 minutes. Documents from each organisation relating to infection control were reviewed to explore policies and the structures of infection prevention and control programs in each organisation and how they were expected to operate. Table 1 describes the types of documents reviewed and the checklist used to guide the review. Interviews with home-visiting nurses and managers were conducted to investigate their perspectives on the structure and management of infection prevention and control programs and to explore issues related to applying infection control practices in a community context including, staff health
and safety. A brief questionnaire also was used to collect participants’ demographic information (see Table 4).

The interview guide for managers included questions about infection control management including staff health policies and procedures. The interview guide for home-visiting nurses explored their perspectives on how infection control policies and procedures for staff health were implemented and issues related to applying infection control in the community context. Following a cross-case analysis of data from all four organisations, focus groups with home-visiting nurses and follow-up interviews with managers were conducted to explore solutions for the issues raised from the document review and individual interviews. The topics included in interviews with home-visiting nurses and managers, and focus groups are described in Table 2.

**Data analysis**

A framework approach (Pope, Ziebland & Mays, 2000) was used to guide data analysis and to link the emerging themes (elements) with the emerging theoretical (conceptual) framework. Notes taken from the document review, interviews and focus groups transcriptions were read. Six key elements for infection prevention and control programs were identified as follows: (i) governance of infection control (ii) infection control policies for client care (iii) staff development and training in infection control (iv) staff health and safety (v) surveillance systems (vi) the environmental context. These six elements provided a conceptual framework (theoretical structure) for the findings of the four cases and the cross-case analysis. In this paper, the findings of one element, staff health and safety, is presented and discussed in detail.

**Findings**

*Structure of staff health*

**Responsibility for staff health**

The responsibility of implementing staff health policies in the community context was usually designated to the branch manager. Responsibilities of the branch manager included reporting and management of incidents, evaluating exposures, providing education and advice with regard to policies and procedures, and reporting referrals to other authorities as one participant described:
It gets reported through a staff injury form. And as it is reported they have to go to a doctor. [Then the manager will]...put [their] action on [the form] and follow up on what [they did] to manage it…[we] offer the employee assistance, any counselling if they need it...It has to be forwarded through to all relevant managers. We have regional manager. They have to read through and sign it and it goes through to the executive manager and head of home care (Jane).

Staff sustaining occupational exposure injuries were referred to a general practitioner who has a contracted to the organisation to provide staff health services. One participant said, “We will probably send them to our preferred medical specialist…we have a nominated doctor now that the staff would go to. That would be the process if the staff was involved” (Glene). Some organisations asked their staff to follow up with their own personal GP and then the organisation would compensate for the associated cost. One participant said, “I went to see my GP. I had a blood test…I reported it to human resources because I had to pay for the blood tests” (Julia). In another organisation, the staff health responsibilities were distributed between the infection control person and the branch manager. For example, the branch manager was responsible for reporting and following up incident reports, while the infection control person was the one to be consulted when staff have an infection.

Staff health was one of the key infection control elements implemented in all CBHVN organisations. However, the structure by which the policies and procedures of this element occurred varied among organisations. Some organisations’ policies addressed only health status, immunisation and management of exposure to blood and body fluid. Other organisations’ policies addressed more comprehensive issues such as client health, pregnant staff, staff allergies, sick leaves and outbreak management. Detailed information about staff health policies and processes is provided next.

**Processes to manage staff health**

**Health status of employees**

A key feature among all organisations was that their policies recommended those staff who are involved in service delivery to clients should be immunised against vaccine-preventable diseases including Hepatitis B, Polio, Tetanus, Whooping Cough, Diphtheria and Tuberculosis. In two organisations, staff who were involved in client care, “should be aware of their (HIV, HCV, HBV) status by seeking serological testing every 12 months” (policy document 13). When discussing that in the interview, one participant said, “I think we just look after our own Hep B and C and those sorts of
boosters through our general practitioners. That is what I do. I just follow up any booster shoots with my general practitioner” (Mary). Although organisations required that all their staff immunisations were current, they did not request their staff to provide vaccination certificates to confirm their immunity, either in the initial employment process or thereafter. One participant stated, “No [staff were not required to provide vaccination proof]” (Kathryn). Another participant said, “It’s an honesty system. If they didn’t write it down, we are not going to know. Do we even keep a record of who has had their vaccination and who has not. No, we do not” (Jane). Most of the organisations encouraged those staff who will be exposed to hazards to have Hepatitis B vaccine. One organisation required their staff to provide proof of a Hepatitis B vaccination. One participant detailed:

All we request on employment is that they show a certificate to ensure that they have Hepatitis B immunisation. Other than that we don’t. In that orientation session [we talk] about immunisation and we give them an immunisation schedule and suggest that they should have their Tetanus and all that sort of stuff, but we don’t insist on it. We only recommend. (Jana)

Likewise, past medical history was required for employment. In one organisation, staff were not required to disclose if they had any infectious diseases. However, they were obliged to not to put any client or their colleagues at risk of infection. They were directed to seek medical advice and notify the manager if there was any risk of transmission (policy document 13). One organisation required their staff to undergo physical examination before employment. One participant disclosed, “We do pre-employment functional [examination] but that is purely looking at their physical capability to do the job” (Jane). Similarly, another participant stated, “[It was] more of my physical limitation at work, my strength, little exercises. So, I had to go to the physio…there was no medical practitioner” (Ann). In one organisation, staff were not required to provide a vaccination status or do a pre-employment physical examination, but they were required to sign a pre-employment health disclosure statement. One of the participants explained:

They sign [a form] when they have been offered the position that they are in good health and able to perform their duty… If…someone…had something that impeded their ability to work and it’s a health [issue] and they have not described it, then we could have some grounds for saying they did not tell us that. (Kathryn)
Expectations of staff vaccination statuses

All CBHVN organisations provided annual influenza vaccine free of charge. Staff were encouraged to receive the vaccination, but it was not compulsory. One participant said, “[They] provide the flu vaccine annually. It is not mandatory but it is available if you want it” (Lora).

Management of injuries and exposures

Needlestick injuries and exposure to blood and body fluids were managed within organisations by firstly educating staff on how to deal with such incidents and secondly by ensuring that all incidents were reported to the branch manager. Management processes for needlestick injuries and exposure to blood or body fluids were provided in all organisations. One organisation had more detailed policies than others. Most of the organisations provided policies on immediate action after exposure, whom to inform, post-exposure management and follow-up, counselling and documentation. All organisations emphasised reporting any sharps injuries. The processes of managing needlestick injuries was approximately similar among all organisations, in that injured staff had to report to the manager and fill an incident report and then go to a GP for blood tests and follow-up care. The processes were reported by one participant as follows:

The person receiving the needlestick injury would go to their superior and let them know that this is what has happen. They would need to fill out a staff incident form saying what happened and then they would need to go to the GP and ask for some blood tests to be done. That would be followed up by the [branch manager]. They would be having a conversation with that staff and the staff would be asking the GP for a confirmation that the staff member had gone and had blood done and the results were clear or whatever. We would need to have that documented and that would go into the staff file. Copies of the result and copies from the GP saying that it is all clear and it has been resolved. (Amal)

One organisation required the client to undergo a blood test when a needlestick injury occurred. The organisation’s policies provided instructions on how to deal with different client scenarios, for example if a client’s history with respect infectious diseases was not available in the client’s record or the client refused to do a blood test. Standard spill management procedures were documented in all organisations’ policies.

Sharps disposal

Some organisation’s policies provided detailed information on the safety procedures to prevent injuries, for example correct handling of sharps, correct disposal of sharps, and not recapping needles (policy document 8_shrps management). The
policy stated that the disposal of sharps should be done through an approved waste management contractor (policy document 8_sharps handling). Another organisation’s policy stated that in a community setting, the minimum standard for disposing sharps being to dispose: “in a rigid-walled, puncture-resistant container that is sealed and securely closed. The container can be then disposed of in the general waste stream or preferably in a community sharps disposal facility, depending on the local council’s guidelines” (policy document 13_sharps management). Some of the locations where a sharps container can be disposed of were provided in the policies such as at the local pharmacy, in a public disposal bin, at a public hospital, in a needle and syringe program, and via residential collection service (policy document 13_sharps management).

The process of disposing of sharps containers varied from organisation to organisation. In two organisations, participants reported that for regular usage of sharps, they were allowed to transport sharps containers with them back to the CBHVN branch for disposal. One participant mentioned, “We…supply sharp boxes [to the] client we are visiting. We would dispose of [sharps] in there…if they get full…we bring them back [to the base] and we can put them into the sharps waste bin with a lock on it” (Lora). Two organisations did not allow home-visiting nurses to transport any sharps in their vehicles. Home-visiting nurses asked the clients to dispose of the sharps container in their normal garbage, when they are full (as per the city councils’ regulation). One participant reported:

[Sharps containers] can be thrown into the normal rubbish and that is acceptable from the council. [Home-visiting nurses] have access to sharps container and once they use it, it will stay in the client home and that can go into normal bin. (Kathryn)

Another organisation asked their clients or their relatives to take sharps container to general practice clinic or pharmacy for disposal. One participant stated, “When [the sharps container] is at its limit…we seal it up and we get the client to dispose of it, whether through their pharmacy, the doctor’s surgery…We do not carry sharps” (Jane).

For once-off, emergency usage of sharps, the sharps was disposed in the clients’ regular garbage after it was placed in sealed hard container (as per city council regulation). One participant provided an example:

If [a home visiting-nurse] used a needle…and it was just one, they would ask the client [if] there is a plastic milk container or a jar that she will put that in there and screw it up, and then it will go to the normal rubbish…We do not carry sharps in our cars. We
do not carry any waste in our cars. We don’t bring them back from [clients’] home[s]. (Kathryn)

If the home-visiting nurses had a sharps container with them and they were allowed to transport sharps in the vehicle, they would then use the sharps container and bring it back to the CBHVN branch for disposal in a large sharps container located in the CBHVN branch. As stated by one participant, “For sharps, [home-visiting nurse] should have in their bags a sharps container and then…they bring it back to [the branch for disposal]” (Jana). Participants reported that on some occasions, they did not have a sharps container with them and they had to recap the needle to be able to throw it in the garbage or bring it back with them to the office for disposal. One participant provided an example:

It’s very rare [for it] to happen. On this weekend we had a new lady admitted…She did not have sharps container and I didn’t have one to give her. So the clexane actually comes with a rubber cap and it’s not very safe of course to Recap. But you put it back on [and that’s] better than chuck[ing] it in the bin the way it is. (RN)

**Personnel health and hygiene**

One organisation’s policies emphasised that staff had to ensure that their uniforms were clean and in good condition. An extra uniform should be kept with the staff, in case the uniform became soiled during the course of the day (policy document 13).

**Work restrictions**

Two organisations had policies on work restrictions for staff when they were sick. One organisation’s policy stated that the infection control staff should be consulted if one of the staff notified their manager that they are suffering from an infection. Staff should be excluded from work (policy document 13_exclusion from duties). Another organisation’s policies stated that staff were to be isolated or given sick leave in the event of an outbreak of infectious diseases (policy document 11_staff illness and leave). One participant reported that in case of sickness, home-visiting nurses should request sick leave. She said, “If you are not well, it’s a good idea to remove yourself from the home…so letting people know if you are not well asking other one of the nurses could they go do the visit” (Ann). One of the organisation’s policies stated that services should encourage, “staff to report their illness or exposure. Decisions on work restrictions should be based on the mode of transmission of and epidemiology of the infectious disease” (policy document 13_high risk staff).
Staff allergies

Staff were encouraged to report any specific conditions such as dermatitis or latex allergies to their service manager only in one organisation (policy document 13_specific condition).

Pregnant staff

One organisation’s policies stated that, “Pregnant staff are encouraged to discuss their situation with their manager. The manager should advise pregnant staff of the special risks associated with pregnancy and give them an opportunity to avoid [clients] with specific infections” (policy document 13_pregnant staff).

Client health

One of the organisation’s clients were encouraged to declare their infectious status if they were of any risk to others (policy document 13_consumer health). It was recommended to undertaken an assessment for infection risk for all clients upon admission, such as past infections, previous hospitalisation and vaccination history. Clients were recommended to be vaccinated for Hepatitis A, Hepatitis B, Influenza, Pneumococcal, Tetanus and Diphtheria (policy document 13_consumer health). Tuberculosis screening was arranged for those who were at risk after consultation with their general practitioner. Clients and their families were encouraged to wash their hands regularly. Providing education to clients and their families about infection control strategies and procedures for dealing with infection control breaches was encouraged.

Transportation on pathology samples

In these cases, specimen collection was not a routine practice for home-visiting nurses. Clients were usually referred to their GP or a pathology company for specimen collection. However, participants reported that in some circumstances when the client was unable to move from their home, home-visiting nurses would volunteer to transfer specimens such as wound swabs or urine specimens to GP clinics. One participant stated:

If it is difficult for them to get to the doctors, I pick up the swab and take that sample and give it to the carers to bring back to the lab. So it is not a standard thing, but it might happen in circumstances where it is very difficult for that client to get to the doctor with mobility. It depends on client circumstances for transport and mobility. (Sara)
One participant reported that the organisation provided them with specimen collection equipment, such as special containers or sealed plastic bags to transfer specimens:

We have got all the [specimen collection] equipment here in the office. We would not keep it with us so if we know that one of the wounds are a bit infected, generally we will come back and grab [it]...I will drop it to pathology immediately after I finish. (Ann)

One organisation only provided instructions on specimen collection and transportation. The policies stated that all staff should be aware of and educated about the collection and handling of specimens. For example, one of the policies outlined that “Clients who are required to obtain their own specimens are to be given a full explanation of the process and rationale” (policy document 13_management of specimen). In the manual, a policy provided clear instructions on how to transport the specimen. For example, it was explained that “All specimens must be placed in a leak-proof container or bag provided by pathology services, and correctly sealed” (policy document 13_management of specimen). The policy also emphasised that staff should ensure safety procedures while collecting and transporting the specimen as follows “The person who obtains the specimen must ensure that the specimen is collected in a safe manner, correctly contained and labelled, placed in a leak-proof container” (policy document 13_management of specimen).

Services should determine who is responsible for transferring the specimen to the pathology services. Delivery arrangements may be organised in some services (policy document 13_management of specimen). Details on the information required to collect specimens, instructions on specimen collection, storage and transportation of specimens is provided in the manual. Specimens can be transported by three main methods: the clients can take their specimen to the laboratory, the specimen can be collected by a pathology courier, or the staff can take the specimen to the laboratory or the collecting agent (policy document 13_management of specimen). If staff were going to transport the specimen, then the specimen must be “separated from the driver’s compartment, bagged and contained in secure leak-proof bag, properly restrained to prevent movement, with a spill kit available in the vehicle, and the specimens not left in the direct light” (policy document 13_management of specimen).
Discussion

In this study, responsibility for provision of staff health services was typically devolved to one individual within an organisation, who was supported by external staff health services. Most of the organisations had the manager of CBHVN branch in charge of managing staff health issues and reporting them to the quality managers. Staff who had injuries or were exposed to infectious materials were referred to experienced physicians for care when required. This was consistent with the recommendation in the available guidelines (Rhinehart & Friedman, 1999; Rhinehart & McGoldrick, 2006).

Strategies used to maintain staff health services in all organisations included, immunisation and management of injuries and exposure to blood and body fluids. Some of these strategies were consistent with the best-practice guidelines, such as the Australian Immunisation Handbook. Existing research highlights the importance of aligning practice with best-evidence and guidelines (Rhinehart & McGoldrick, 2006; Hoy & Richmond, 2009; Swanson & Jeans, 2011; ACSQH, 2012; Civil, et al., 2014). However, pre-employment requirements were not consistent with the identified essential component for health assessment in the available guidelines (Friedman & Petersen, 2004; Civil, et al., 2014). Not all organisations required their staff to undergo a physical medical assessment or to provide confirmation of immunity. Only one organisation required their staff to confirm their Hepatitis B status. Most of the organisations did not oblige their staff to declare any health issues. However, some organisations had policies that obliged staff not to put clients or their colleagues at risk. Another organisation required their staff to sign a health statement. Pre-employment assessment is an important element for staff health services to establish baseline data for surveillance and identify staff allergies to use PPE, such as latex gloves. Documentation of staff health data and data analysis of infectious exposure and disease was recommend in the available guidelines (Rhinehart & McGoldrick, 2006). But, it was not addressed in most of the CBHVN organisations. Periodic health assessments were recommended for those who were exposed to any type of hazard to document any changes in their health. Most of organisations required periodic health assessments, particularly Hepatitis B blood tests for those who were exposed to injuries or exposures, which was consistent with the available guidelines.
Work restrictions, staff allergies and pregnant staff are important issues that should be addressed in staff health services (Friedman & Petersen, 2004; Hoy & Richmond, 2009; Swanson & Jeans, 2011; Civil, et al., 2014). Only one organisation addressed those issues in their staff health policies. CBHVN organisations should have clear policies that mandate reporting to a branch manager when staff have infections and to consult with the infection control person with regard to staff health statuses. Pregnant staff should be provided with education on the risk of exposure and consequences on the fetus. Pregnant staff should be restricted from working with clients with Rubella and Varicella (Friedman & Petersen, 2004; Civil, et al., 2014). It is important to identify those staff who have specific allergies to educate them about their statuses and provide them with proper equipment that does not irritate their skin.

In these organisations, existing policies for the management and disposal of sharps were not always applicable for the community context, especially disposing of sharps when a sharps containers were not available. Despite that guidelines and law requires CBHVN organisation to provide sharps containers to the home-visiting nurses to be available with them in the field. Participants reported that they sometimes engaged in dangerous practices such as recapping needles to be able to dispose of them in the client’s normal garbage when a sharps disposal container was not available in client’s home. Another issue for some organisations was that they asked their clients to transport and dispose of their sharps container on their own and did not provide alternative solutions for cases where the client was not able to move or able transport the sharps container themselves. The existing policies were not encompassing of this practice, and in this way were not consistent with current guidelines that recommend providing policies on safety handling and transporting sharps (Rhinehart & McGoldrick, 2006; Civil, et al., 2014). Reviewing sharps management policies for safety measures during transportation of sharps in a community context is important to ensure staff safety.

The findings showed that handling and transporting specimen was not standard practice in the community context. However, participants reported that they occasionally volunteered to collect and transport specimens to a GP’s office or a pathology laboratory, if the clients were not able to do it by themselves. Policies on safe handling and transporting these specimens were not always provided in the infection control policies. This is not consistent with the guidelines, which recommend including
safe handling and transporting of pathology specimens in infection control policies (Rhinehart & McGoldrick, 2006).

Case study is considered a strong research method when an holistic, in-depth analysis is required (Baxter, 2008). This methodology enables in-depth investigation that provides understanding of a complex phenomenon, by describing the phenomena and exploring new issues and areas for development (Khon, 1977). It also enabled the researchers to explore the structure, processes and mechanism of evaluation of infection prevention and control programs including, the challenges of implementing of infection control practices in four different CBHVN organisations. Examining multiple organisations allowed understanding of the differences and similarities between the organisations and provided richer information and stronger general analytical conclusions. The use of multiple data collection sources in a triangulated manner in case study is considered a major strength of this approach (Merriam, 1998b). The use of three different resources in this research ensured data triangulation and gave more detailed picture and more convincing conclusions about the staff health and safety in CBHVN. Although case study is considered a good method to explore there are limitations, such as lack of generalisability. However, case studies enable “analytic generalisation” (Yin, 2008) rather than statistical generalisation.

This study was specific to four not-for-profit CBHVN organisations in southeast Queensland and to the Australian context. Findings could inform studies in other CBHV organisations. Future research could investigate the applicability of staff health and safety policies in the community context to develop standard guidelines that addresses challenges and issues.

**Conclusion**

Staff health services are vital to protect the health and welfare of healthcare workers, patients and the community from infection, in particular healthcare-associated infection, in both hospital and community settings. Healthcare workers sustain sharps injuries and occupational exposures not infrequently, which in some instances result in significant morbidity and mortality.

The findings of the study highlight that some aspects to staff health programs are established and function well. However, other aspects were less well address, such
as managing pregnant staff, staff allergies and staff with infections. Staff illness or injuries may effect staff scheduling and increase the burden on other staff, as well as effecting the quality of care provided to clients. Our study suggests reviewing the structure of staff health services and ensuring that the policies and procedures cover all recommended areas in the available literature. Effective staff health services are essential for effective infection prevention and control programs.

Moreover, some staff health policies within the organisations, such as disposal of sharps waste in the field, were not always practical for home-visiting nurses in the field. Our study suggests the review policies to address the challenges with regards to sharps disposal and to provide alternative strategies for disposing of sharps, for example in those circumstances when a sharps container is not available in the client’s home, and for those clients who cannot transport sharps by themselves to the appropriate disposal area and where the organisation does not allow staff to transport sharps in their vehicle. Moreover, clear policies on how to transport sharps in CBHVN is required for those organisations that allowed their staff to transport sharps within their vehicle. Comprehensive staff health services are important for the health and welfare of both staff and patients.
<table>
<thead>
<tr>
<th>Accessed documents</th>
<th>Topic guide</th>
</tr>
</thead>
</table>
| **Infection control management documents** | • ICMP  
• Responsibility of infection prevention and control programs  
• Consultation processes  
• Staff accessibility to infection control manuals  
• Process of developing and evaluations IC manuals  
• Reports on infection control committee meetings  
• Infection prevention and control programs assessment tool for IPCMPs  
• Infection control program evaluation and feedback reports  
• Evaluation reports and quality improvement plans |
| **Infection control policies for client care including manuals** | • Hand hygiene  
• Standard precautions, transmission-based precautions and use of personal protective equipment  
• Provision of intravenous therapy  
• Infection control practices related to wound care, respiratory tract care and urinary tract care  
• Application of clean and sterile technique  
• Cleaning and disinfecting of medical equipment supplies and storage  
• Handling and transport of medical waste management and laboratory specimens  
• Needlestick injury  
• Risk management and hazard management  
• Management of needlestick injury  
• Management of blood and body fluid spills  
• Handling and disposing sharps  
• Using body and blood spill kit  
• Infection control equipment provided to staff |
| **Surveillance system** | • Definitions for HAIs  
• HAIs Surveillance form  
• Statistical records for HAIs  
• Outbreak management plans  
• Process to monitor and analyses HAIs  
• Risk identification methods and quality improvement  
• Clinical forms related to infection control, such as infection notification forms, initial client assessment form for infections |
| **Infection control education plan** | • Education materials related to infection control  
• Education plan  
• Topics included in orientation programs such as policies and procedures for client care role of surveillance in preventing infection and occupational health risks  
• Strategies to provide education |
| **Occupational health** | • Initial assessment and health history  
• Confirmation of immunity and provision of vaccines  
• Initial and annual TB tests, as required  
• Identification of occupational exposure and follow-up of non-blood-borne pathogen exposure  
• Post-exposure prophylaxis for exposure to blood-borne pathogen  
• Exclusion from patient care activities  
• Surveillance for occupational health risks [risk and hazard management policy]  
• Follow-up with staff exposed to infectious disease.
Table 2 – Interviews and focus groups guide for managers and home-visiting nurses

<table>
<thead>
<tr>
<th>The interviews included the following topics:</th>
</tr>
</thead>
<tbody>
<tr>
<td>• Ensuring safe healthcare services and organisational infection prevention and control programs</td>
</tr>
<tr>
<td>• Organisational management strategies for monitoring and evaluating infection prevention and control programs</td>
</tr>
<tr>
<td>• Policies and procedures are available for infection control</td>
</tr>
<tr>
<td>• Strategies to monitor compliance with infection prevention and control programs</td>
</tr>
<tr>
<td>• Surveillance system for HAIs</td>
</tr>
<tr>
<td>• Processes for notifiable diseases and included diseases</td>
</tr>
<tr>
<td>• Processes for employee health and occupational hazard</td>
</tr>
<tr>
<td>• Process of education or training in infection control</td>
</tr>
<tr>
<td>• Assessing employee’s competency with regard infection control practices</td>
</tr>
<tr>
<td>• Equipment related to infection control provided to staff</td>
</tr>
<tr>
<td>• Providing infection control consultation to employees</td>
</tr>
<tr>
<td>• Management of clinical wastes and sharps disposal</td>
</tr>
<tr>
<td>• Mechanisms for reporting any feedback to employees</td>
</tr>
<tr>
<td>• The role of client education in implementing infection prevention and control programs in CBHVN</td>
</tr>
<tr>
<td>• The role of the infection control professional in developing and implementing infection prevention and control programs</td>
</tr>
<tr>
<td>• Challenges of developing and infection prevention and control programs and plans in CBHVN</td>
</tr>
<tr>
<td>• The strategies used by home-visiting nurses to overcome the challenges of implementing infection prevention and control programs</td>
</tr>
</tbody>
</table>

Table 3 – Description of the four not-for-profit organisations

<table>
<thead>
<tr>
<th>Services provided by the organisations</th>
<th>• Wound care</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>• Palliative care</td>
</tr>
<tr>
<td></td>
<td>• Post-acute care</td>
</tr>
<tr>
<td></td>
<td>• Personal care</td>
</tr>
<tr>
<td></td>
<td>• Social support</td>
</tr>
<tr>
<td></td>
<td>• Allied health services</td>
</tr>
<tr>
<td>Staff qualifications</td>
<td>• Youth services</td>
</tr>
<tr>
<td></td>
<td>• Counselling</td>
</tr>
<tr>
<td></td>
<td>• Aged care</td>
</tr>
<tr>
<td></td>
<td>• Emergency relief and disability services</td>
</tr>
<tr>
<td>The organisations employed various types of specialties including:</td>
<td>• Registered nurses</td>
</tr>
<tr>
<td></td>
<td>• Disability support</td>
</tr>
<tr>
<td></td>
<td>• Occupational therapists</td>
</tr>
<tr>
<td></td>
<td>• Personal carer</td>
</tr>
<tr>
<td></td>
<td>• Physiotherapist</td>
</tr>
<tr>
<td></td>
<td>• Mental health nurses</td>
</tr>
</tbody>
</table>

Table 4 – Demographic data of the participants

<table>
<thead>
<tr>
<th>Participants (n=28)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Age (years)</td>
</tr>
<tr>
<td>18–42</td>
</tr>
<tr>
<td>43–66</td>
</tr>
<tr>
<td>Gender</td>
</tr>
<tr>
<td>Female</td>
</tr>
<tr>
<td>Male</td>
</tr>
<tr>
<td>Experience in CBHVN</td>
</tr>
<tr>
<td>1–15 years</td>
</tr>
<tr>
<td>16–31 years</td>
</tr>
<tr>
<td>32–46 years</td>
</tr>
<tr>
<td>Highest qualifications</td>
</tr>
<tr>
<td>Diploma degree</td>
</tr>
<tr>
<td>Bachelor degree</td>
</tr>
<tr>
<td>Master degree</td>
</tr>
<tr>
<td>Others</td>
</tr>
<tr>
<td>Current job</td>
</tr>
<tr>
<td>RN</td>
</tr>
<tr>
<td>EEN</td>
</tr>
<tr>
<td>Managers</td>
</tr>
</tbody>
</table>
Paper 5: Surveillance activities in community-based home visiting nursing

Target Journal: Healthcare Infection

Abstract

Aim: The surveillance and reporting of healthcare-associated infection is core to high quality healthcare and systems. Healthcare-associated infections and antimicrobial resistance were once the problem of formal, hospital settings. This is no longer the case, and they are a risk wherever healthcare is provided. Despite this, little is known about surveillance and reporting of healthcare-associated infection, antimicrobial resistance, and antibiotic usage community settings are inclusive of community settings. This paper presents the results of a study of the structure and processes for the surveillance and report of healthcare-associated infections surveillance in four community-based home visiting nursing organisations in Australia.

Methodology: Exploratory case study was conducted in four organisations in southeast Queensland, Australia. Data triangulation was used (document review, individual interviews and focus groups). Infection control documents were analysed. Interviews and focus groups were conducted with 28 staff. Procedures of monitoring Healthcare-associated infections, identifying their risk, and utilising the findings to prevent Healthcare-associated infections, were explored. Challenges of implementing surveillance systems were also explored. Data were analysed using the framework approach (Pope, Ziebland & Mays, 2000) to identify themes and six main elements for infection prevention and control programs were identified.

Findings: The findings of the study showed that Healthcare-associated infections were informally monitored and reported in community-based home visiting nursing. The challenges of conducting Healthcare-associated infections surveillance in the community context included: lack of guidelines for establishing surveillance systems, lack of definitions for Healthcare-associated infections, limited tools to collect data on Healthcare-associated infections, and a limited number of infection control specialists employed to carry out surveillance activities.

Conclusion: Guidelines on how to establish surveillance systems in community-based home visiting nursing are required. These include data collection tools, developing definitions for healthcare-associated infections for community settings and
epidemiological analysis. Employing an infection control specialist to conduct surveillance activities, such as identifying risk and using surveillance data to reduce infection risk and evaluating prevention strategies, is required.
Introduction

The need for infection control practices in the American healthcare system became particularly evident after World War II when several outbreaks of *Staphylococcus aureus* were reported in hospitals in the US among newborns (Rhinehart & Friedman, 1999d). Teams of healthcare workers, including nurses, physicians and microbiologists, investigated the outbreaks and developed measures to prevent further outbreaks (Rhinehart & McGoldrick, 2006). A key part of their work was measuring and monitoring the frequency of the infection, which now known as “surveillance”. Surveillance is defined as “the ongoing, systematic collection, analysis and interpretation of health data essential to the planning, implementation, and evaluation of public health practice, closely integrated with timely dissemination of these data to those who need to know” (Center for Disease Control and Prevention, 1988, p.1).

The beginning of formal infection control in hospital settings was in 1958, when The American Hospital Association recommended all hospitals to undertake surveillance of Healthcare-Associated Infections (HAIs). HAIs are defined as “infections that patients acquire during the course of receiving treatment for other conditions within a healthcare setting” (Center for Disease Control and Prevention [CDC], 2010, p.1). In 1970, the CDC recommended establishing infection prevention and control programs and assigning specialist nurses to infection control. These nurses were responsible for investigating and reporting HAIs (Cruickshank & Murphy, 2009). Later, in 1974, the Study of Evaluation the Efficacy of Nosocomial Infection prevention and control programs (SENC) was conducted and a surveillance system was introduced in many large hospitals (Haley & Shachtman, 1980). In 1976, the role of infection control nurses and their surveillance activities was enhanced when the Joint of Commission and Accreditation of Health Organization (JACHO) included infection prevention and control programs as a standards requirement for accreditation of hospitals (Rhinehart & McGoldrick, 2006).

In the contemporary setting, the surveillance and reporting of healthcare-associated infection, antimicrobial resistance, antibiotic usage is central to quality and safety in health care (Shaban et. al, 2013). Contemporary surveillance systems are in the main hospital-based and apply to formal health care facilities use local or national
definitions, if they are available. These efforts are, however, far from standardised and in Australia there is at present no standardised, comprehensive and integrated national system for the surveillance and reporting of healthcare-associated infection, antimicrobial resistance, antibiotic usage. Shaban and colleagues (2013) argue that “without comprehensive and coordinated surveillance systems, efforts to prevent and contain AMR may be misdirected and inefficient, whereby poor practices such as inappropriate therapy result in wasted limited resources, and harm and human suffering through the inability to provide an effective drug to patients in need (p. 14).

As healthcare services expand into community settings, so too does the risk of HAIs transmission. In 1989, JCAHO introduced a standard that required each Community-Based Home Visiting Nursing (CBHVN) organisation to establish a system to record infections related to the care provided by staff to clients, in order to be accredited (Rosenheimer, 1995; JCAHO, 2004a). A few CBHVN organisations started to establish a surveillance system to meet the JCAHO standard (Rosenheimer, 1995). One CBHVN organisation developed a simple surveillance system to track urinary tract and bloodstream infections in patients with foley catheters and intravenous therapy. The system aimed to improve patients’ outcomes through the identification and reduction of the risk of infections. Several individual home care organisations developed their own surveillance definitions (White & Ragland, 1994; Rhinehart & Frideman, 1999d). In 1999, Association for Professionals in Infection Control and Epidemiology (APIC) published recommendations on how to develop a surveillance system in home care (Rhinehart & Frideman, 1999d). The recommendations included seven steps for developing surveillance system. In 2001, APIC published draft definitions for surveillance of infections in home care to comply with the accreditation requirement, establish baseline rates, evaluate of infection control measures, provide education on infection control and identify of possible outbreaks (Embry & Chinnes, 2001).

However, these definitions were not widely adopted by other CBHVN organisations. Developing a standardised surveillance system for CBHVN has been challenging (Manangan, et al. 2003), and there is are few examples of national integrated systems globally. Despite the fast growth of CBHVN, the epidemiology of HAIs is still undefined. The challenges of developing a surveillance system include: lack of nationally accepted standardised definitions of HAIs in home care, lack of methods for data collection, lack of trained infection control personnel, lack of client follow-up, difficulty detecting clinical and laboratory data, difficulty obtaining data to
calculate infections rates, such as numerators and denominators (Rosenheimer, 1995; Rosenheimer, Embry, Sanford & Silver, 1998; Rhinehart & Frideman, 1999d; Manangan, et al., 2003; Rhinehart & McGoldrick, 2006). Much of this existing research on surveillance in CBHVN was developed from individual efforts of CBHVN organisations in the US. There is little known about how infections, in particular healthcare-associated infections, are monitored in CBHVN in Australia. This paper reveals the extent to which HAIs and other infection surveillance systems operate in four CBHVN organisations in Australia.

Methodology

This study is one element of major case study investigating infection prevention and control programs in four CBHVN organisations in southeast Queensland, Australia (Felemban, 2014). An exploratory case study approach and multiple-case design according to Yin (2009) was used to gain a holistic and deep understanding about the structure and processes of infection prevention and control program in CBHVN. Donabedian’s framework (2005) was used to explore the structures of infection prevention and control programs (essential elements and policies); processes of infection prevention and control programs (management and implementation); and outcomes of infection prevention and control programs (monitoring and evaluation). Elements of best practice in infection control were identified from the literature and used to guide data collection. Triangulation of data sources included: document review, individual interviews and focus groups. The researcher’s university and the participating organisations’ research ethics committee approved the study. Home-visiting nurses and managers of CBHVN in one branch were invited to participate in the study.

Four not-for-profit CBHVN organisations participated in the main study. Descriptions of the organisations are provided in Table 3. A total of 28 staff participated in the study between September 2012 and December 2013. A total of 16 individual interviews were conducted. A total of 21 staff participated in three focus groups. The duration of each interview and focus groups was between 45 and 60 minutes.

Documents from each organisation relating to infection control were reviewed to explore the structures of infection prevention and control programs in each organisation and how they were expected to operate. Table 1 describes the types of documents reviewed and the checklist used to guide the review. Interviews with home-visiting
nurses and managers were conducted to investigate their perspectives on the structure and management of infection prevention and control programs and to explore issues related to applying infection control practices in a community context including, surveillance systems. A brief questionnaire also was used to collect participants’ demographic information (see table 4).

The interview guide for managers included questions about infection control management. The interview guide for home-visiting nurses explored their perspectives on how governance and processes of monitoring HAIs were implemented and issues related to surveillance of HAIs in community context. Following cross-case analysis of data from all four organisations, focus groups with home-visiting nurses and follow-up interviews with managers were conducted to explore solutions for the issues raised from the document review and individual interviews. The topics included in interviews with home-visiting nurses managers, and focus groups are described in Table 2.

**Data analysis**

A framework approach (Pope, Ziebland & Mays, 2000) was used to guide data analysis and to link the emerging themes (elements) with the emerging theoretical (conceptual) framework. Notes taken from the documents review, interviews and focus groups transcriptions were assessed. Six key elements for infection prevention and control programs were identified as follows: (i) governance of infection control (ii) infection control policies for client care (iii) staff development and training in infection control (iv) staff health and safety (v) surveillance systems (vi) the environmental context. These six elements provided a conceptual framework (theoretical structure) for the findings of the four cases and the cross-case analysis. In this paper, the findings of one element, surveillance systems, is presented and discussed in detail.

**Findings**

*Structure of surveillance system*

A key feature among all the organisations was that surveillance of HAIs was informally structured because monitoring of HAIs was not a standard practice in the community context. Only two organisations developed policies for surveillance of HAIs. For example, in one organisation’s policy it was stated that the branch manager was responsible to perform surveillance processes including, collecting HAIs surveillance reports, analyzing data and calculating HAIs rate, applying risk identification methods and utilising the information for risk reduction and quality
improvement (policy document 2_ surveillance). Definitions of different HAI types was provided in the organisation’s policy (policy document 2_ surveillance). In the other organisation, the policy described that HAI data were collected using a monthly infections form. However, participants reported that surveillance policies were implemented only in aged care facilities and it was not applied in CBHVN services in both organisations.

Participants from different organisations reported that there was no official infection surveillance system in CBHVN. One participant stated, “We don’t have [surveillance system]” (Kathryn). Another participant stated, “We do not have surveillance reports” (Ashly). However, HAIs were unofficially monitored. One participant provided an example as follows:

We might pick up a reoccurring habit like with [a] gentlemen [who had a urinary] catheter. Each month we go out and do our review, through those reviews we are identifying that there is a reoccurrent…infection. It would affect his mobility, he ended up with a hospital admission, so we [think] something is not right. So [we] dig a little bit deeper...and we start identifying and pulling in other care workers involved in the care to a case conference, to look for what is happening at each service to find what is their [point of view]. That is where it was identified that the catheter was being disconnected. So unofficially we are tracking it. We noticed that [so] we implemented some training for the client’s education and some education for staff…it is documented in the client’s file, but not in a system anywhere for the company to recognise it. So unofficially. (Jane)

The responsibly for monitoring HAIs was usually integrated within the role of the branch manager. One participant reported, “From my understanding if any client has any infection, [the nursing supervisor] will be informed, so that could be a process that our supervisor handles. But my job is to inform her” (Sara). Processes used to monitor HAIs in CBHVN is provided next.

**Processes of monitoring and reporting HAIs**

CBHVN organisations used different processes to monitor HAIs. Generally, processes used to monitor HAIs in CBHVN included infection register forms, incident report forms and client progress notes. Each process is explained separately next.

**Infections register forms**

One organisation used an infection register form to monitor and follow up HAIs, in particular, wound infections. Participants reported that this surveillance activity was conducted in one branch only. The following information was required to be filled in
the form: client record number, date symptoms commenced, date of swab, results of
swab, antimicrobial date commenced, oral antibiotics date commenced, place of
occurrence of the infection, and date symptoms resolved (form 1_ wound infection
register). There was a designated person for infection control in the branch. This person
was responsible for monitoring these HAIs and analysing the data monthly. The
strategy of wound infection surveillance was explained by one participant as follows:

All the [HAIs] are informed that they have to bring back the results and notify about
infection. In our monthly meeting if [we] see that there has been very minimal results
that come back then we will start to question what is happening here. They might be
legit [that there was] no infection [occurring] but it is more likely that they forgotten to
get the results and put them back onto the chart...The data was documented in [a wound
infections register]...we have a folder that [we] use. If we swab, we will get those
results back and all those results will go into a folder and the [ICP would] trend those
[monthly]... [The data then would be] interpreted [according] to the load of
bacteria...and relaying that back to [the] clinical signs and symptoms and the client’s
condition, to determine whether to call it a wound infection. There are still some really
grey areas in interpreting what infection is. So, for the purposes of our data trending, if
[the load of infection]… is three pluses or a high bacterial load was really called
localising infection and if we have the associated clinical signs like cellulitis and high
temperatures, then we might say [it is a] systemic infection. So all of these [data] are
trended [monthly] and then we put a copy into the folder...I do not think anywhere else
probably does that. I am not sure if other centers trend their wound infections in
community health…but I think that it is a really important part of infection control
program that is lacking across the board. (Glene)

Client progress notes

Client progress notes were used in two organisations. HAIs were documented in
the clients’ progress notes and followed by the home-visiting nurse in charge. One
participant reported:

They would have all [HAIs] written in their progress notes...it will be all based on the
progress notes and [home-visiting nurses] usually get the information from the general
practitioner...so we can include that into the clients’ notes as well. (Kathryn)

Another participant explained:

We document [HAIs] in the [clients’] files if there has been any record or any
exceptional reporting...We do have our wound care treatment records where if they
had one infection, we can identify that on there and what is has been treated with. Do
we fill out an infection form and monitor and track and trend that way? No, not at this
site. (Jane)

Incident report forms

Incident report forms were used by two organisations. Participants reported that
HAIs were monitored through the incident reporting system. Notification of HAIs was
integrated with the incident report forms. One participant explained:
We do have the clients incident forms where we can identify if there is any skin irritation or rashes or if there is been an infection. But we don’t have the appropriate tracking and trending tools to monitor that...we don’t report it to the organisation, just to the team involved with that client care. (Jane)

In another organisation, HAIs were reported to the nursing supervisor or nurse manager and then the home-visiting nurse would fill out an incident report form. One participant reported, “Essentially I am relying on clinical staff to inform us [about HAIs] by using an incident report” (Nova).

Mechanism for evaluation of HAIs results

In CBHV, HAIs were monitored mainly for treatment purposes, rather than evaluation of the outcomes. The client’s GP would be the contact if home-visiting nurses suspected their clients to have any type of HAIs. One participant said:

The doctor plays a major role in the care that we provide, they are part of that link... We might be able to swab the result through. But then it is up to the doctor to chase them up and follow them up through faxing our letters, depending on how chronic the wound is. (Jane)

One participant also stated that she would inform the client’s GP most probably to prescribe the treatment for them. She said, “I would contact the patient’s GP. Because, probably if they got an infection they are going to need antibiotics anyway” (Julia).

Another participant said, “Generally those results will come back to us and it will also go to the client’s general practitioner. They might commence them on antibiotics, but we will make a decision at this level whether or not we will commence them a topical antimicrobial. It is really at our discretion” (Glene).

HAIs were tracked and analysed within two organisations. In one organisation, HAIs were officially analysed. The results were reported to the head office in one organisation only. One participant explained as follows:

We do incidence reporting and analysis... [for] the infections when the services report that residents or clients developed respiratory infections, urinary infections, wound infections, [and] gastro. And then every month [we] look at those reports. [We] do a bit of analysis if [the infection rate] is higher this month in [one region]. [We] ask them for more information and then [we] report that to our care governance committee on a monthly basis. The reports are given to the regional manager. Once a quarter [we] do a trending analysis. (Jana)

Surveillance results were used to follow up HAIs rates and to investigate the strategies used by the branch to deal with the problem locally. One participant reported, “Every
month [we] look at the trend, and [we] will often go back and ask the service manager to explain [how she] address[ed] the issue…from the service level” (Jana).

In another organisation, HAIs were monitored and analysed in only one branch. Surveillance results were reported internally at the staff meeting within the branch, but they were not reported to the head office of the organisation. One participant said, “Those results will be tabled at our monthly meeting where everybody is involved…We do not feed that back to the major [infection control] committee. It is only for this branch as far as I am aware” (Glene). Information from HAIs surveillance reports was utilised to apply simple prevention strategies or education purposes. One participant explained:

The results that we get from the trending is about identifying a bacterial load might be a risk to others, so we might put him at the end of the list in our daily practice so we are preventing the transfer of infections to the patients…I mean it is not very big and I know when you are trying to implement any clinical terms it is a lot bigger than just talking about it, but I think it is a very good starting point and we should be looking more broadly at our practice there…and if it is an unusual bug and it is interesting, we might do some education around that as well…there are a lot of whole data that we could take from this information, but at this point it is fairly basic. (Glene)

**Challenges in HAIs surveillance in community-based home visiting nursing**

Monitoring HAIs, and tracking and analysing the data in CBHVN was difficult and was not done properly for several reasons, such as the nature of the work environment, lack of specialised staff in infection control, limited valid tools to collect data, and lack of guidelines on surveillance systems. One participant explained as follows:

It is not a controlled environment…we don’t actually document [the rate of infections] because it’s very hard [for] us to do it. But from wound care, if there are any issues we have got a good wound summary and assessment forms. So [home-visiting nurses] fill that out to say what [the wound] looks like (necrosis or redness), they can take photos. So, [home-visiting nurses] do document all of that, but we don’t really collate wounds infections or catheters infections in the community…I certainly see that it would be a good idea [to monitor clients’ infections]. I don’t know who would be given the job to look at all the data. As we are on output-based funding from the government, we don’t get funded for a position to do that type of thing. The document says this is how much money you are going to get and this is how many clients you are going to see. (Kathryn)

Another participant reported that lack of a proper and valid tool to track HAIs was another challenge in the community context. She stated:

I can’t [monitor infections] very well. [I could] if someone could get me a tool to say this is what I could use to monitor infections and trend them. Actually, if you have a tool that have got some validity out of it, some strength to it, credibility to it. That would be great; give me the tool, I would use it. (Nova)
Another participant reported that lack of guidance and policies on HAIs surveillance is another challenge. She reported:

To trend and track in home care is challenging...[home-visiting nurses] can report it and you will have all these forms [but then] what I am going to do with them. It is really what are we reporting on...what I am going to do with them...So you do get them reported, but how do we use it effectively? (RN)

One participant commented that the current HAI rates might not represent the real picture in the community setting due to limited valid tools, strategies and guidelines for surveillance systems. She explained:

I probably suspect there are more infections occurring that are not being reported. I would probably think that we could probably have a higher incident [rate] of infection but they are not intend to be reported because of prudent other reasons. But I suspect that for every infection that is reported, [there] might be one that has not been reported. I have got no evidence to support that, so I can’t really say with much confidence. If I could monitor it better, if I could track better, I would have greater confidence that what we are seeing is representative. But I don’t know how to do that much better. (Nova)

Discussion

In this study, surveillance and reporting of healthcare-associated infection, antimicrobial resistance, antibiotic usage was not systematic and not a key feature of the structure and process of the organisations infection prevention and control programs. Few tools to monitor infections in CBHVN were available to the cases to undertake surveillance, which was consistent with the challenges of surveillance in previous literature (Rosenheimer, 1995; Rosenheimer, Embry, Sanford & Silver, 1998; Rhinehart & Frideman, 1999d; Manangan, et al., 2003; Rhinehart & McGoldrick, 2006). Most of the participating organisations used incident report forms or client progress notes to monitor HAIs, which is not consistent with available guidelines. Only one branch in one organisation used an infection registry form to collect data on HAIs and to analyse their rates. However, this tool only targeted one type of infection. Developing a standard tool for HAIs surveillance is required in CBHVN services. Providing a valid tool and effective strategy to monitor HAIs would lead to early identification of the HAIs, early intervention and maybe fewer complications and better outcomes. Moreover, there were limited guidelines on HAIs surveillance in CBHVN, which was consistent with Rhinehart & McGoldrick (2006). There was also a limited number of infection control specialists employed. Developing guidelines for surveillance systems is important to assist CBHVN organisations to establish surveillance systems that are appropriate to
their context. Employing an expert in infection control to carry out surveillance activities is also essential.

The monitoring of HAIs in CBHVN that did occur was mainly used to follow up clients’ treatment plans rather than identifying risk factors or evaluating prevention strategies. This approach is not consistent with available recommendations (Rosenheimer, 1995; Rosenheimer, et al., 1998; Rhinehart & Frideman, 1999; Rhinehart & McGoldrick, 2006). It is essential that HAI surveillance reports are used in a more effective and efficient way.

Case study is considered a strong research method when an holistic, in-depth analysis is required (Baxter, 2008). Case study methodology enables in-depth investigation that provides understanding of a complex phenomenon by describing the phenomena and exploring new issues and areas for development (Khon, 1977). Case study enabled the researchers to explore the challenges of implementing infection control practices in four different CBHVN organisations. Examining multiple organisations allowed understanding the differences and similarities between organisations and provided richer information and stronger general analytical conclusions. The use of multiple data collection sources in a triangulated manner in case study is considered a major strength of this approach (Merriam, 1998a). The use of three different resources in this research ensured data triangulation and gave more detailed picture and more convincing conclusions about surveillance system in CBHVN. Although case study is considered a good method to explore there are limitations, such as lack of generalisability. However, case studies enable “analytic generalisation” rather than statistical generalisation.

This study was conducted in four not-for-profit CBHVN organisations in southeast Queensland and was limited to the Australian context. However, the findings could inform studies in other CBHV organisations. Future research could investigate the establishment of surveillance system for the community context and develop standard guidelines that address these challenges and issues.

**Conclusion**

The surveillance and reporting of healthcare-associated infection, antimicrobial resistance, and antibiotic usage is central to quality and safety in health. Contemporary surveillance systems are in the main hospital-based and apply to formal health care facilities use local or national definitions, if they are available. Developing systems and
guidelines to enable this to occur is fundamental as health care is increasingly devolved from hospital to community settings. Healthcare-associated infections and antimicrobial resistance are no longer problems of formal, hospital settings. They are a risk wherever healthcare is provided. Ensuring surveillance and reporting of healthcare-associated infection, antimicrobial resistance, and antibiotic usage community settings are inclusive of community settings is fundamental to the health and welfare of patients, their families and the community. Conducting surveillance for HAIs may assist in identifying risk factors, establishing baseline data on HAI rates, evaluating the effectiveness of control measures and providing education on specific infection control matters. There is a need for surveillance systems in CBHVN to develop benchmarks to compare HAI rates and assess prevention strategies.
<table>
<thead>
<tr>
<th>Accessed documents</th>
<th>Topic guide</th>
</tr>
</thead>
</table>
| **Infection control management documents** | • ICMP  
• Responsibility of infection prevention and control programs  
• Consultation processes  
• Staff accessibility to infection control manuals  
• Process of developing and evaluations IC manuals  
• Reports on infection control committee meetings  
• Infection prevention and control programs assessment tool for ICMPs  
• Infection control program evaluation and feedback reports  
• Evaluation reports and quality improvement plans |
| **Infection control policies for client care including manuals** | • Hand hygiene  
• Standard precautions, transmission-based precautions and use of personal protective equipment  
• Provision of intravenous therapy  
• Infection control practices related to wound care, respiratory tract care and urinary tract care  
• Application of clean and sterile technique  
• Cleaning and disinfecting of medical equipment supplies and storage  
• Handling and transport of medical waste management and laboratory specimens  
• Needlestick injury  
• Risk management and hazard management  
• Management of needlestick injury  
• Management of blood and body fluid spills  
• Handling and disposing sharps  
• Using body and blood spill kit  
• Infection control equipment provided to staff |
| **Surveillance system** | • Definitions for HAIs  
• HAIs Surveillance form  
• Statistical records for HAIs  
• Outbreak management plans  
• Process to monitor and analyses HAIs  
• Risk identification methods and quality improvement  
• Clinical forms related to infection control, such as infection notification forms, initial client assessment form for infections |
| **Infection control education plan** | • Education materials related to infection control  
• Education plan  
• Topics included in orientation programs such as policies and procedures for client care role of surveillance in preventing infection and occupational health risks  
• Strategies to provide education |
| **Occupational health** | • Initial assessment and health history  
• Confirmation of immunity and provision of vaccines  
• Initial and annual TB tests, as required  
• Identification of occupational exposure and follow-up of non-blood-borne pathogen exposure  
• Post-exposure prophylaxis for exposure to blood-borne pathogen  
• Exclusion from patient care activities  
• Surveillance for occupational health risks [risk and hazard management policy]  
• Follow-up with staff exposed to infectious disease. |
Table 2 – Interviews and focus groups guide for managers and home-visiting nurses

<table>
<thead>
<tr>
<th>The interviews included the following topics:</th>
</tr>
</thead>
<tbody>
<tr>
<td>• Ensuring safe healthcare services and organisational infection prevention and control programs</td>
</tr>
<tr>
<td>• Organisational management strategies for monitoring and evaluating infection prevention and control programs</td>
</tr>
<tr>
<td>• Policies and procedures are available for infection control</td>
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<tr>
<td>• Strategies to monitor compliance with infection prevention and control programs</td>
</tr>
<tr>
<td>• Surveillance system for HAIs</td>
</tr>
<tr>
<td>• Processes for notifiable diseases and included diseases</td>
</tr>
<tr>
<td>• Processes for employee health and occupational hazard</td>
</tr>
<tr>
<td>• Process of education or training in infection control</td>
</tr>
<tr>
<td>• Assessing employee’s competency with regard infection control practices</td>
</tr>
<tr>
<td>• Equipment related to infection control provided to staff</td>
</tr>
<tr>
<td>• Providing infection control consultation to employees</td>
</tr>
<tr>
<td>• Management of clinical wastes and sharps disposal</td>
</tr>
<tr>
<td>• Mechanisms for reporting any feedback to employees</td>
</tr>
<tr>
<td>• The role of client education in implementing infection prevention and control programs in CBHVN</td>
</tr>
<tr>
<td>• The role of the infection control professional in developing and implementing infection prevention and control programs</td>
</tr>
<tr>
<td>• Challenges of developing and infection prevention and control programs and plans in CBHVN</td>
</tr>
<tr>
<td>• The strategies used by home-visiting nurses to overcome the challenges of implementing infection prevention and control programs</td>
</tr>
</tbody>
</table>

Table 3 – Description of the four not-for-profit organisations

<table>
<thead>
<tr>
<th>Services provided by the organisations</th>
</tr>
</thead>
<tbody>
<tr>
<td>• Wound care</td>
</tr>
<tr>
<td>• Palliative care</td>
</tr>
<tr>
<td>• Post-acute care</td>
</tr>
<tr>
<td>• Personal care</td>
</tr>
<tr>
<td>• Social support</td>
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<tr>
<td>• Allied health services</td>
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<table>
<thead>
<tr>
<th>Staff qualifications</th>
</tr>
</thead>
<tbody>
<tr>
<td>• Youth services</td>
</tr>
<tr>
<td>• Counselling</td>
</tr>
<tr>
<td>• Aged care</td>
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<tr>
<td>• Emergency relief and disability services</td>
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</tbody>
</table>

The organisations employed various types of specialties including:

<table>
<thead>
<tr>
<th>Registered nurses</th>
</tr>
</thead>
<tbody>
<tr>
<td>• Disability support</td>
</tr>
<tr>
<td>• Occupational therapists</td>
</tr>
<tr>
<td>• Personal carer</td>
</tr>
<tr>
<td>• Physiotherapist</td>
</tr>
<tr>
<td>• Mental health nurses</td>
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</tbody>
</table>

Table 4 – Demographic data of the participants

<table>
<thead>
<tr>
<th>Participants (n=28)</th>
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</thead>
<tbody>
<tr>
<td>Age (years)</td>
</tr>
<tr>
<td>18–42</td>
</tr>
<tr>
<td>43–66</td>
</tr>
<tr>
<td>Gender</td>
</tr>
<tr>
<td>Female</td>
</tr>
<tr>
<td>Male</td>
</tr>
<tr>
<td>Experience in CBHVN</td>
</tr>
<tr>
<td>1–15 years</td>
</tr>
<tr>
<td>16–31 years</td>
</tr>
<tr>
<td>32–46 years</td>
</tr>
<tr>
<td>Highest qualifications</td>
</tr>
<tr>
<td>Diploma degree</td>
</tr>
<tr>
<td>Bachelor degree</td>
</tr>
<tr>
<td>Master degree</td>
</tr>
<tr>
<td>Others</td>
</tr>
<tr>
<td>Current job</td>
</tr>
<tr>
<td>RN</td>
</tr>
<tr>
<td>EEN</td>
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<tr>
<td>Managers</td>
</tr>
</tbody>
</table>
Abstract

Aim: Community-based healthcare services are increasingly popular modes of delivering mainstream healthcare services. International research has identified some of the challenges and risks of delivering care in these extra-hospital care settings. There is often a lack of sanitary facilities, including a sink with running water, affecting the clients’ ability to maintain an appropriate level of personal hygiene, which may increase the risk of infection and affect the ability of home-visiting nurses to perform simple infection control practices such as hand hygiene. Of the existing research, little is known about the context and environmental influences that community-based settings have on infection prevention and control practices in Australia. This paper presents the findings of a study that explored the challenges home visiting nurses’ experience with infection control practice in community-based home visiting nursing, and the strategies they used to overcome those challenges.

Methodology: An exploratory case study was conducted in four community-based home visiting nursing organisations in southeast Queensland, Australia using data triangulation (document review, individual interviews and focus groups). Infection control documents were reviewed. Interviews and focus groups were conducted with 28 staff. Data were analysed using the framework approach (Pope, Ziebland & Mays, 2000) to identify themes and six main elements for infection prevention and control programs were identified.

Findings: Three major infection prevention and control challenges were experienced by home visiting nurses control in the community context. The first challenge was the nature of work environment, which was influenced by cleanliness of the client’s home environment, availability of proper hand-washing facilities and the availability of products storage space. The second challenge was availability of infection control equipment, including wound management materials and sharps disposal containers. The last challenge was client’s personal hygiene and health status.

Conclusion: Ensuring staff are well supported with resources, education, policy and practice guidelines to address these challenges is important for the delivery of safe and high quality care in community settings.
Introduction

Healthcare delivery has traditionally been provided in hospitals. However, over the last 20 years, the delivery of healthcare has increasingly shifted away from hospitalisation to community settings (St John & Keleher, 2007). Community-Based Home Visiting Nursing (CBHVN) organisations are now major providers of healthcare (Kralik & Van Loon, 2011). This shift from hospital to community has brought with it many of the risks associated with hospital-based care, including healthcare-associated infection. There is a risk of infection transmission wherever healthcare is provided. Healthcare-associated infections (HAIs) are, however, preventable through implementing effective infection control practices. There are various risk factors that may affect implementation of infection control practices in CBHVN (Swanson & Jeans, 2011). Jarvis (2001) identified that one of the challenges was delivering care in uncontrolled home environments. The home environment has proven to be an issue when providing nursing care. Home-visiting nurses provide care to clients in an environment that is not always well maintained or ideal (Swanson & Jeans, 2011; Felemban, St John & Shaban, 2012). Homes are sometimes infested with rodents and insects (Friedman & Rhinehart, 2006; Swanson & Jeans, 2011). There may be a lack of sanitary facilities, including a sink with running water, affecting the clients’ ability to maintain an appropriate level of personal hygiene, which may increase the risk of infection as well as affect home-visiting nurses’ ability to perform simple infection control practices such as hand hygiene (Felemban, St John & Shaban, 2012).

Kenneley (2010) argued that maintaining standard infection control practices can be a challenge in uncontrolled and chaotic environments, sometimes with client’s friends, families, and pets present and with limited resources. In the community context, home-visiting nurses are guests in clients’ homes, so they need to work with whatever resources they bring, or the resources provided by clients. Home-visiting nurses cannot order, but only request that clients provide appropriate materials and environment, and then try their best to do their job with whatever is available in clients’ environment. Community contexts are less stable, more unpredictable and less resource rich than hospital-based settings. Felemban, St John and Shaban (2012) conducted a study that investigated the enablers and barriers to hand-hygiene practices among home-visiting nurses. The results of the study showed that availability of hand-hygiene facilities, equipment and supplies had implications for compliance with hand-hygiene practices in
the community context. Put simply, a lack of resources contributed to poor practices and hand hygiene compliance. The ability of home-visiting nurses to control and reduce the risk of infection related to clients’ environments is thus limited (Friedman & Rhinehart, 1999).

International research has identified that clients’ environmental context can be a major challenge to applying standard and effective infection control practices in CBHVN (Swanson & Jeans, 2011; Kenneley, 2010; Jarvis, 2001). Little research has investigated the strategies used to overcome these issues, particularly in the Australian setting. The aim of this study was to explore the environmental challenges confronting home-visiting nurses with respect to applying infection control practices in CBHVN and the strategies used by home-visiting nurses to overcome those challenges.

Methodology

This study is a part of major case study investigating infection prevention and control programs in four CBHVN organisations in southeast Queensland, Australia (Felemban, 2014). Four not-for-profit CBHVN organisations participated in the study. A description of the organisations is provided in Table 3. An exploratory case study approach and multiple-case design according to Yin (2009) was used to gain a holistic and deep understanding about the structure and processes of infection prevention and control programs in CBHVN and to explore issues related to implementing infection prevention and control in CBHVN.

Donabedian’s framework (2005) was used to explore the structures of infection prevention and control programs (essential elements and policies); the processes of infection prevention and control programs (management and implementation); and outcomes of infection prevention and control programs (monitoring and evaluation). Elements of best practice in infection control were identified from the literature and used to guide data collection. Triangulation of data sources was used: document review, individual interviews and focus groups. The researcher’s university and the participating organisations’ research ethics committee approved the study. Home-visiting nurses and managers of CBHVN in one branch were invited to participate in the study.

Documents from each organisation that related to infection control were reviewed to explore policies and the structures of infection prevention and control programs in each organisation and how they were expected to operate. Table 1 describes the types of documents reviewed and the checklist used to guide the review.
Interviews with home-visiting nurses and managers were conducted to investigate their perspectives on infection control practices for client care to explore issues related to applying those practices in community context. A brief questionnaire also was used to collect participants’ demographic information (see table 4).

The interview guide for managers included questions about infection control management including developing, implementing and evaluating mechanisms of infection control practices. The interview guide for home-visiting nurses explored their perspectives on how infection control practices for client care were implemented and issues relating to applying infection control in the community context were discussed. Following cross-case analysis of data from all four organisations, focus groups with home-visiting nurses and follow-up interviews with managers were conducted to explore solutions for the issues raised from the document review and individual interviews. The topics included in interviews with home-visiting nurses and managers, and focus groups are described in (Table 2). Documents related to infection control were reviewed. A total of 28 staff participated in the study between September 2012 and December 2013. A total of 16 individual interviews were conducted. A total of 21 staff participated in three focus groups. The duration of each interview and focus group was between 45 and 60 minutes.

**Data analysis**

A framework approach (Pope, Ziebland & Mays, 2000) was used in this study to guide the data analysis process and to link the emerged themes (elements) with the theoretical (conceptual) framework that was adopted for this study. Notes taken from the document review and the transcriptions of interviews and focus groups interviews were analysed to ensure familiarisation with the data. Six key elements for infection prevention and control programs were identified as follows: (i) governance of infection control (ii) infection control policies for client care (iii) staff development and training in infection control (iv) staff health and safety (v) surveillance systems (vi) the environmental context. These six elements provided a conceptual framework (theoretical structure) for the findings of the four cases and cross-case analysis. In this paper, the findings of one element, which is the environmental context, are presented and discussed in detail.
Findings

For the home-visiting nurses in this study the work environment, which was usually the client’s home, presented major challenges. Home-visiting nurses found infection prevention and control practice in clients’ homes difficult. One participant stated, “In the community, the fact that you are in the patient’s home [means] you are limited partly by what they are able to supply and their kind of environment that they are living in [is a challenge]” (Julia).

The nature and management of the work environment

The nature of the home-visiting nurses’ work environment was influenced by three issues: cleanliness of the client’s home environment, availability of proper hand-washing facilities and the availability of products storage space. Participants reported that clients’ environments were sometimes uncontrollable, unpredictable and unhygienic. Problems included: the home’s structure, clutter, the level of hygiene, vermin and ‘bugs’, and pets. Clients’ environments varied. Some people lived in clean and neat environments, while other lived in soiled and messy environments. Some clients lived in caravans or sometimes they were homeless. Not every client had the ability to provide an ideal and clean environment that was suitable for providing clinical care. An example of how bad the condition of a client’s environment could be was provided by one participant as follows:

We had a gentlemen who did not really have a [complete] house. He had no walls…and the plumbing I don’t know if it worked in the bathroom. But in the kitchen, I am not touching that sink. There were spider webs everywhere and [a] wasp nest and mice pellets everywhere (Ann).

Home-visiting nurses are only guests in clients’ homes. Therefore, they could not unilaterally regulate clients’ behavior; they only could make requests and try their best to perform their job with whatever was available in the clients’ environment. One participant stated:

I think the biggest barrier we have is going to [a] client’s home and not being in control of the situation…Because you don’t know where [you will] have a good work area. You try to create that and encourage the client to do that on admission, but that is not always the case. So you [have] got to work around what you have got. Like, you will go into house and it’s the kitchen table that you have to utilise as your workspace. Something like that…I guess just the fact that you have got to work with what you have got, really. Like you can go to a home that is fantastic and [is] great. Works very well. But then you can go into a really crowded home, which has limited space, and it’s quite unclean. But you have got still make your area where you [are] working clean and hygienic to be able to perform tasks. So that is kind of the balance and juggling with community nursing. (Mary)
Participants reported that levels of hygiene in the work environment in the community context were a very important factor for providing better care. One participant stated, “I guess that [in] some of the homes [with] clutter…you can’t always provide the best care that you would always like to in a clean environment” (Nora). Participants also reported that vermin, bugs and pets were another problem related to the client’s environmental hygiene. Participants shared their experience as follows, “There was a client who had wasps and mice, because he has all the RatSak [poison baits] on the floor” (RN). Another participant said, “[another] client has cockroaches dropping[s] everywhere in her house from her cupboard (RN). Another one also said, “I have been to places that are crawling with cockroaches and stuff like that all over the place” (RN, FG3). Another participant said:

Pet hair, animals and things actually jumping near the client [are issues] so you have to lock them away. Probably children coming and touching [the sterile field] can be a challenge that you have to use a bit of diversional therapy to get them to go. Give them toys or something. (Sara)

Home-visiting nurses had limited control over the clients’ environments. However, they reported trying their best to manage the challenges related to clients’ environmental hygiene using several strategies. The strategies reported by participants to overcome environment challenges included: offering assistance, trying to find an isolated clean area to perform the task, using any clean surface, such as wheelchairs or coffee tables when available. The first strategy used was to suggest to clients to have domestic help. One participant said, “Sometimes you just try to talk to them into having a support worker to go and clean their house for them. Some of them don’t want that either, but some of them do” (RN). When participants were asked how they created their workspace in this cluttered environment, one participant said, “Usually [I use] the wheelie walker. [I] wipe it down…and it can be a moved away from everything. So yeah, that is always a good option” (RN). Another participant added, “We kept everything high up when we were attending to the wound care. Nothing down or low” (RN). The second strategy reported by one participant was: “Sometimes you just have to create your own field to work in. You just talk to the client and say I have to clear this area and clean it and then I am going to use it because I need a clean field to work in” (RN). Another participant added, “Or you go perhaps somewhere else where in the home that was not cluttered. So you had that area that you could actually do that particular service on, such as wound care or whatever” (RN). The third strategy reported
by one participant was: “[You use] whatever is around, [for example] a chair. There is always something around you can pull [up]. So you have to use what is around you really” (RN). Another participant also mentioned that sometimes if the client is a hoarder, they asked the client to remove items, especially if they would put staff at risk. She said:

It depends if it was unsafe. Then we have to have that discussion with the client that we need to make sure that it is safe for our staff to go in. They would probably need to remove [the item] if it was blocking the door. If something happened, we could not get out. If it was unsafe, then we have to have this conversation with them and ask them to move this particular item. (RN)

Similarly, one manager provided suggestions on how to deal with hoarder clients as follows:

I will try to encourage staff to try and have a small area isolated and they can control that environment and minimise risk, rather than eliminating risk. Because they are never going to do [be able to do] it. Alternatively, I suppose we [talk to the client and say] “Look, this is a high risk and I am not going to do wound management. You need to attend your GP or you need to come to the clinic.” (Nova)

Pets and pet hair were another factor in the home environment. Strategies used by participants to deal with pets at home included asking the client to restrain the pet or removing the pet from the room while performing the procedure, especially if it was a wound dressing procedure. The organisations usually had a policy for this issue. One participant said, “We have a policy in place where we ask customers to restrain their animals while we are doing service delivery” (RN). Another said, “We can ask for the pets to be outside” (RN). Clients were usually cooperative in this matter. For pet hair, participants reported that they either offered clients assistance in cleaning or they used an isolating sheet, such as ‘blueies’, to create a clean environment for a procedure. Participants suggested cleaning services for clients to deal with pet hair. One participant said, “We could put a cleaning [services] in place, but the person had to accept that” (RN). One participant provided wound dressing as an example of dealing with a client whose house was full of pet hair. They attended to his wound dressing as follows:

We put extra cleaning in and he was really good about it. We had to weigh up the balance because you have got a depressed palliative [care] man [who] is dying, and his dog is his only company. So, it is a really fine line. So we just put on extra cleaning services, twice a week. (RN)

Participants reported that sometimes clients refused assistance. Then, they tried to work with resources to which they had access. One participant said, “If it’s only with wound care, then we would do that even if there was pet hair there. We certainly have to
work around it” (RN). Similarly, another participant said, “You try and reason with
them and build a relationship, but sometimes for some sort of reason they might not
want that assistance. So you just have to work with them the best [way] you can and
with what you have got” (RN). Another participant added, “[We] let them know [the]
implication…let them know the risks of performing [wound dressing in unclean
environment] and if they are happy we can document that they are happy to have it,
even if there was pet hair heavily in the home. That has happened [with one client]”
(RN). Another participant shared her experience, “Sometimes [we] were doing like a
wound care and the dog sleeps in the bed. That is where we got our ‘blueie’ or a sheet
from a dressing pack. So we put that underneath [to form a barrier]” (RN).

Participants reported dealing with vermin and bugs by organising with the client
to bring in pest control, depending on the risk involved. Withholding community
nursing services was used as a method if a client refused to cooperate. One participant
shared her experience of dealing with a client who had a flea problem. She said, “We
got that lady who was infested with fleas in her house. And we get her to get the pest
control people” (RN). Similarly one participant said, “We do [call pest control] but we
need the approval of the client. If it is not the client, then it would be the family member
or next of kin” (RN). Another participant shared her experience as follows:

What we [did] with one of our clients is that we organised pest control to come in and
they sprayed the house and we withheld services until they had come and until they
came back again to make sure that the environment was safe for our carers. And then
we would reinstate the visit after that. (RN)

One participant reported that sometimes clients do not always give permission to solve
the problem. In that situation, home-visiting nurses avoided those parts of the home.
She said:

[For those who] were content to live with that standard of living, there were certain
parts of house where we would not engage in any activity because of the cleanliness
level. There was multiple families living within that home. So we did what we could on
what we have control over. (RN)

Another participant reported that they would sometimes withhold the services if
the risk was high and the client refused to cooperate. One participant said:

It depends on the standard or the level of the hazard in the home, which would determine
if we are going to continue the service within the customer’s home; it depends on the
risk involved. If it puts the staff at risk, then we have to make that decision through our
health and safety team on whether we need to put our services on hold or withdraw our
services due to [the] risk factor. It is the same with pets if they are letting their dogs out,
sniffing and biting our staff. We can put our services on hold until they fix it. And that is no different for vermin. But we have to identify the hazards and what risk it’s going to pose to our staff. (RN)

Participants reported that working in the home environment was difficult, especially when clients were not cooperative or unable to change their circumstances. One participant said: “Sometimes you can’t change it. You have just got to work with environment and improve that as best as you can” (RN). Another participant gave an example as follows, “[There was a] client who refuse[d] to have any other services apart from social support. So we attended his wound and his Clexane injection” (RN). Participants reported that the best solution for this challenge was to be creative and try to work with whatever was available.

The availability of proper hand-washing facilities and equipment in clients’ homes was problematic for the nurses. Participants reported that hand-washing facilities like a bathroom or sink were not always available, clean or appropriate to be used for hand washing. Moreover, hand-washing equipment such as antibacterial soap, clean sinks, and clean towels were not always provided by all clients. One participant said that, “Some of them don’t have adequate hand-washing facilities. They have a very dirty sink, and taps are dirty, and [they use] a cake of soap, [or] the same person or all the family are using the same towel” (RN). Another one said, “Some will give you a clean towel, but really sometimes you might not really want to touch it” (Julia). Similarly, another participant said, “There might not be adequate hand-washing facilities in the house where we are” (Lora). Another participant also stated:

Well, when you are going to [clients’] homes you are probably relying on a clean hand towel and sink that does not have filth around it, that has an antibacterial liquid soap and…you can’t use the throw-away towels. Having things to wash your hands suitably with is probably the biggest issue. (Ashly)

The strategies reported by the participants used to overcome lack of hand-washing facilities and equipment included, asking the client to provide them with proper hand soap and paper towel. Where nothing was available, participants would rely on alcohol-based hand rub to clean their hands. Participants reported that the availability of alcohol-based hand rub had made it easier for them to overcome a lack of hand-washing facilities in clients’ homes. However, sometimes alcohol-based hand rub was not helpful, especially when they were required to decontaminate their hands and the facilities were inadequate in client’s house or a client was homeless and running water was not available. Some clinicians reported using public toilets to wash their hands in
such situations. One participant suggested providing a hand-hygiene kit and hand wipes for home-visiting nurses to use in those unusual circumstances. Some nurses asked clients to provide hand-washing equipment. One participant said, “At the first visit, the assessment nurse used to ask [clients] to buy some pump-action soap and a roll of kitchen towel” (RN). Similarly, another one said:

When it is a wound admission, I always say to the client that they need to provide soap and dry hand towels and a clean environment for us to do the wound care. It does not always happen, but you do what you can do. The majority of the time there is somewhere you can go. (RN)

Participants also used alcohol-based hand rub when some clients were not able to provide hand-hygiene facilities and equipment. One participant stated “[I] use the alcohol hand rub [to clean my hands]” (RN). Another participant said, “[In] some houses it is not worth trying to wash your hands. [So, I use] alcohol gel” (RN). Another participant said, “[I] keep a lot of gloves [and I] use the hand rub” (RN). Another participant reported using the kitchen sink if the bathroom sink and soap were not appropriate. She said, “[I would use] the dish washing stuff in the kitchen. If it is the cleanest place and just get the washing detergent and wash [my] hands” (RN). Another one said “[I use] baby wipes” (RN). If clean towels were not available, one participant reported that, “[I] usually just shake [my hands] (RN). While another participant said that she would use the, “one [paper towel] in the dressing pack” (RN). Another participant reported using her own towel to dry her hands or using public facilities to wash her hands. She said:

I would have probably carried my [own] hand towel. If there was a facility to wash my hands, I use my hand towel rather than using the client’s, and [I use] the hand rub, and perhaps community facilities like shopping centers to wash [my] hands. (RN)

Participants provided suggestions on some types of hand-hygiene equipment that would help them to overcome this issue. One participant said, “The only thing that would make a difference for me is a roll of paper towel or wipes” (RN). Another participant said, “Wipes would be something that I would consider, but if you don’t store them correctly they may dry [out]” (RN). On the other hand, some participants did not see this to be an issue in CBHVN. One participant reported “hand washing not much of a problem because of that alcohol [gel] (RN). Another participant said “Using alcohol correctly is effective as washing your hands” (RN). One manager reported that providing home-visiting nurses with alcohol-based hand rub helped in solving the issue.
However, availability of water is still an issue when home-visiting nurses are required to wash their hands especially, when clients are homeless. She said:

Some of the environments which [home-visiting nurses] go into in the community it’s hard sometimes to always have the best practice when there is no running water…That is only one small part of it and I honestly don’t know how to [make it better]. We can’t control people’s homes… [home-visiting nurses] are reaching homeless situations so that is always going to be an issue because we can fix their wounds, but the home hygiene is difficult. (Kathryn)

Another manager suggested providing hand-hygiene equipment for home-visiting nurses to assist them to practice proper hand hygiene when situations are less than ideal. She said:

It could be [helpful to give home-visiting nurses] a separate pack that has a little bit of [liquid] soap and paper towel, a plastic bag, and we need some sterile water… It has merit to consider it even if the [home-visiting nurses] have it and do not need to use it, except very rarely. It is in the nurses’ kit most of the time and they ought to use it on the odd occasion…I think it would be very helpful to have them…So having a hand-washing kit like that, which I would assume that it would be fairly inexpensive, so we could easily give it to staff…[or] hands wipes would be simpler because you are not having [to] mess about with soap and water. So one hand wipe, like alcohol-based hand wipes, I don’t know how effective that is for cleaning your hands…it is possibly an idea worth exploring. I would imagine it would be better than nothing…Or maybe use the wipes first to clean your hands and then use the gels after that…to reinforce it, maybe. (Nova)

Storing products, such as wound dressing materials in clients’ homes, was also challenging. Participants reported that materials and products were usually delivered directly to a client’s house by a private company. Some clients stored them in clean boxes away from dust and dirt, while others did not. A participant commented, “I suppose…storage equipment in [clients’] homes [is one of the challenges]; some patients will buy like a nice plastic box with a lid, while others just stuff things in plastic bags with dogs running around [them]” (Julia). Likewise, another participant mentioned, “With your wound care products, some of the homes are dusty. [Clients have] pets, so actually storing products to make sure that they are still clean to use on the clients [is an issue] (Ann). The wound dressing materials usually come in big packs and home-visiting nurses sometimes had to use a small piece and keep the rest of it for the next visit as one participant said:

It is not a great practice to cut pieces up and reuse them. But you know if you are using something like 10x10 or something that is like $70 for a piece, it is very expensive. So you can’t justify cutting part of it, and then throwing it away. So we do have to reuse those products. (Glene)
Strategies to overcome problems with storage and maintenance of equipment included asking the clients to keep them in a plastic box or plastic bag away from sunlight and pets, or in an appropriate cupboard. Extra dressing materials were folded back and sealed and kept with other materials for the next visit. Scissors were cleaned with soap and water and alcohol swabs before they were used to cut the dressing materials. Products were stored in a protective container in a place that is away from sunlight, dust, and pets to protect the product from getting contaminated and to prevent infection. To manage this issue, one participant said, “We ask the client what they have at the home, like a plastic box or snap-lock plastic bags. Some homes are clean so they stay in the box that they came in from the company and we leave them sealed” (RN). Another participant added, “[We] try and keep [it] clean and tidy and [we] try and encourage them to have a specific spot for us to have access to it” (RN). Another one commented, “[I] can usually find a spot for the box on the top of the fridge or something” (RN). One participant said, “We usually keep them in a cupboard or somewhere out of way of dust and somewhere cool that is not going to [be] really got hot, [away from] the sun as well, so things don’t deteriorate” (RN). Another one stated, “[I] just explain to clients [that] it’s probably the best to put them out of the way of the people, out of the way from the pets and all the dirt and grime” (Ann). Other reported strategies for storing extra pieces from partly-used dressing materials. One nurse indicated that they would “Fold it back up and tape it and put it in a sealed bag” (RN). Another described that she would use a sealing bag as follows “We seal it in its bag or we tape it with Micropore™ tape so it’s not open to the air” (RN). While another nurse use a sterile container as she stated “We do use the sterile specimen containers. There is one in our kit, so if you ever were in a situation, you could use that” (RN). Similarly another nurse said “We trying to keep it in a sterile pack and close it and, if not, in a sterile container” (Glene). Participants also reported cleaning scissors before cutting a piece of dressing material to try to avoid contaminating the rest of the dressing materials, “We will [use] our alcohol swabs or alcohol hand rub to wipe the scissors [before cutting the material]. But I am not convinced that this is 100% appropriate, but that really is the only mechanism that we have out there at the moment” (Glene). Another participant said, “Most of our clients, we get them to clean their scissors [with] antibacterial soap and water…or boil them and then dry them and put them in the bag in the freezer” (RN).
Resources availability and management

The availability of infection control equipment was another challenge raised by participants in CBHVN. Participants reported that personal protective equipment (PPE) and alcohol-based hand rub gel were provided by the organisations. However, home-visiting nurses still sometimes met challenges with regard to the availability of some resources, such as wound management materials. In unusual situations such as providing emergency injections to a clients, home-visiting nurses also encountered problems with sharps disposal in the community context. Each issue is explained separately next.

Participants reported that the availability of wound management materials was sometimes an issue in CBHVN, because it depended on the clients’ financial status and their ability to provide the required materials. The health outcome of those clients who were able to provide high-quality materials was relatively better. Most home-care clients required wound dressing services and required materials for their dressings, such as medicated dressing packs, single use dressing packs, gauze, plasters and any other materials that were essential to dress their wounds. The cost of most of the materials used in wound dressing was very expensive. The organisations were not always able to provide those materials to the clients free of charge, because they were non-profit organisations.

The essential materials were provided to clients through a private company. The home-visiting nurse would open an account for clients and then order all the required material in their names. Then, the company would deliver the material straight to the client’s home and the client would pay for those materials. One participant stated, “The client has to buy all the wound care products and that kind of thing. We would order them through [the local provider] and then the clients pays for those” (Mona). There were some situations when clients were very poor and not able to afford to buy a dressing pack each time they required a dressing. home-visiting nurses then had to reuse the same dressing pack, which participants identified may jeopardise the sterility of the equipment and place clients at risk of infection. One participant stated:

Some patients use the same sterile pack and ask you to time and time again if they can. I mean there is enough that goes in there, if it is a tiny wound, to be used three times. So, it is not sterile after you have open[ed] it for the first time. You really have to judge whether you think it is appropriate and then gently say that we really need to be using a single one each time. But then that is a cost implication, at a dollar a time, and if somebody is having a dressing three times a week, they are using dressings and three dollars with it. Some people don’t have that kind of money, so you have to go with that
compromise as well. That is another thing that I think does not help cross-infection, because in this country the patient has to pay for their dressing themselves. (Ashly)

One participant argued that the ability of home-visiting nurses to provide good quality services to less fortunate clients may not be possible sometimes in the community context, especially with few options and resources provided. She commented:

Sometimes clients won’t even pay for dressing packs, so you know that is another issue. Then, in that case, I would look into [using] a clean towel. Hopefully there will be a clean something around somewhere in the home that you can put stuff on. (Kathryn)

Strategies reported by participants to overcome the shortage of wound management materials were as follows: changing the dressing regime, using cheaper dressing materials, reusing the dressing pack in some circumstances when it is possible or when there are instructions on how to store them and clean them. The last strategy was to use materials that were donated by other clients.

Participants reported that they dealt with a shortage of wound dressing materials by trying to reduce the cost to clients, such as reusing the unused materials from the previously used dressing pack, using donated materials or trying to change the wound dressing regime. One participant reported, “[We do not do] sterile [dressing] like the hospital…We can only be clean as we can be. We try to keep the cost down for them as far as we can” (RN). Another participant reported that they reused the same pack and provided their clients with instructions on how to maintain the dressing materials. She said:

I worked with [an] organisation [in the past]…we used to provide…[clients] with a little handbook on how to care for the materials that we provided to them. So we reused them, even though the package says single use only, we used to reuse them. And they went through a particular cleaning process and every customer I used to visit was compliant. They kept them in the right storage container and they actually had a really good process of how to take care of your dressing products. I told them how to store it, how to boil water and how to store it so when we had to do the next service, it cut down the cost for them. Especially [we are] talking about people in our community [who] are living on a retirement budget. The wound healing was never delayed, it healed, we got good results and we probably were able to use the product never more than two to three times before opening a new pack, because they don’t have that much of a life [because] they are only single use. (RN)

Another participant reported reusing the dressing pack in some situations. She said:

[We use the dressing pack twice] sometimes if the house is reasonably clean and the box is quite clean and you have only used one or two things out of it, so you just keep the stuff that you have not touched at all and you can use it twice. (RN)
Another participant suggested referring clients to a wound dressing clinic. She said, “Sometimes we try to refer them to the vascular clinic, so they can get reviewed and get free dressings from the hospital” (RN). Another participant used donated items. She said, “We [use] stuff that people donated” (RN). Another strategy was to reduce the cost. One participant mentioned:

We certainly do consider cost. If people are paying for their own [products], we try and minimise the cost as much as we can. We look for the most economical way to provide the service, and the most effective way. So, I am not a big one for reusing things personally, but I just look for the most effective way to do it. There is always different options, and it depends on the wound. If it is very tiny abrasion or something and the client is very concerned about the cost that much, that might be a situation where we reuse it. But, certainly if it is anything different than that, I personally do not reuse them. The [new] pack is only [cost] 70 cent, but certainly we would reuse if we are not using all the gauze and that pack is only for a small wound and then it may be used again for the next time. You just fold it up again and pop it in its little bag. (RN)

Another strategy was to use the shower. One participant said, “Sometimes you could just shower the wound and you don’t have to use a dressing pack. That is appropriate, you can do that” (RN, FG3). Another strategy was to change the dressing regime. One participant reported:

Maybe we look at changing what sort of dressing we are using. Yes, it might be a bit expensive initially, but we only goes once a week rather than going twice a week or [three days a week] downs to two days a week. (RN)

Participants also reported that sharps disposal was a challenge for them while providing home-care services. Participants usually disposed sharps in a special sharps container. However, sharps disposal was reported to be an issue in unexpected events, such as when the participant had to give an injection to a client who did not own a sharps container. One participant stated, “It does happen in the community. Not very often, but there are situations when we didn’t realise that they needed a sharps container” (Amal).

Participants reported different strategies to deal with sharps disposal in those unusual circumstance. Participants disposed of sharps in glass or plastic containers or sometimes they recapped the needle. Some carried a sharps container in their car. Strategies to dispose of this sharps container varied. It was either brought back to the office by the home-visiting nurses to dispose of in a big wheelie container in the branch where a specialised company would collect it from the site. Another strategy was to ask the client to take the sharps container to their GP or pharmacy to dispose of it in a
The last strategy was to dispose of the sharps container in the client’s normal bin. One participant also reported recapping the needle. She said:

If it is a needle, then I would have put it back into its cover, because I have to. I know that [I am] not supposed to do it, but I would. And I either wrap it up in some newspaper and pop it in the rubbish bin or I would put it in my kit and bring it back to the office and dispose of it here [in the special sharps bin]. (Amal)

Similarly, another participant shared her experiences, giving an example as follows:

It’s very rare. On this weekend we had a new lady admitted…for Clexane injection and she did not have a sharps container and I didn’t have one to give her. So the Clexane actually comes with a rubber cap and it’s not very safe, of course, to put it back on, but you put it back on rather than chucking it in the bin the way it is. (RN)

Other participants mentioned that they would put sharps in a container before deposing of it, “[I would put it] in a glass jar or milk container or something like that” (RN), “[In a] milk bottle, something with a lid on it” (RN). “I usually ask them for a milk bottle” (RN). “Just a plastic containers” (RN). Participants reported that strategies to dispose of the sharps container when it is full varied according to the council regulations of the area. One participant said:

I don’t see a lot of education from our local council about how to dispose of sharps within our organisation. We always provide our customers with…appropriate receptacles to put them in and then provide them with details on where they can dispose of them [such as a GP’s office or pharmacy]. We encourage them not to throw it in the general waste. (RN)

Other participants reported throwing sharps containers in the normal garbage. One said, “[I] chuck it in the bin. [We] are allowed to do that” (RN). Another participant said, “[I] double bag them in two plastic shopping bags and tie them and put them in the rubbish” (RN). Another participant said, “Sharps are allowed to be thrown in the normal bin once the container is full” (RN). One manager stated that her staff are not allowed to transport sharps in their vehicle and they are allowed to throw it in client’s bin. She explained:

We do not suggest that our staff travel with sharps or containers that are full. They are not allowed to do that because it is too much of a risk. We have a policy that we don’t travel with a sharps container unless they are empty…We also make suggestions to [clients] if they say that they can’t afford [it]… to put them in a plastic milk bottle because that can then be thrown into the normal rubbish and that is acceptable from the council. My staff have access to a sharps container and once they use it, it will stay in the client’s home and that can go into normal bin. (Kathryn)
Another manager had a different opinion. She does not encourage her staff to throw sharps containers in client’s normal garbage because it is risky. She explained:

I would not encourage my staff to throw the sharps in a milk container. Hypodermic needles are designed to go into skin, muscle and tissue. So, through a cardboard box there is big chance [of it] protruding and you are putting people at risk; the people who have to dispose of the garbage. I won’t encourage them to use a glass container, such as a coffee jar. (Nova)

The manager was not certain what the council regulation was with regard to disposing of sharps containers in the client’s home. She said:

I don’t know that council rules. They may allow for it, but personally I think that it would be irresponsible. I would not encourage my staff to do it. I would want them to put it in a proper sharps container and that sharps container is disposed of and incinerated properly. But I don’t know if there is a policy. I just think it is irresponsible to do so. (Nova)

**Client’s personal hygiene**

Participants reported that clients’ personal hygiene may influence the clients’ health and their ability to recover quickly, especially for wound healing. One participant reported that the level of clients’ hygiene depended on, “…what they will accept [is clean in their perspective]. Some people are willing to adapt, some people [would be like] ‘I live this way. If you don’t like it, lump it’” (Nora). Participants reported that some people thought it was fine to have a particular level of hygiene without understanding it could place them at risk for infections. Home-visiting nurses could not impose particular behaviours or practices in the client’s home if the client did not agree with it.

Strategies suggested to encourage clients to improve their poor personal hygiene included: looking for the reasons for the poor personal hygiene and trying to solve it or providing alternative solutions; educating clients and their families on the negative impacts of poor hygiene on health; getting the client’s GP involved; explaining the implication of good hygiene on their recovery and building rapport.

Clients were encouraged to improve and maintain their personal hygiene using several strategies. The first strategy was by finding the reason for clients’ poor personal hygiene and trying to find a solution to make it easier for them to maintain their hygiene. One of the participants said, “To make it as easy as possible for them, to put equipment in their environment that makes it easy” (RN). She provided an example as follows:
If it's a climbing bath and the shower is over the bath, and they probably won't be able to climb into the bath, so they won't have [a] shower. So if you were able to put aids in place, such as a seat, and you show them how they use that seat, they can actually get in the bath...So put in that sort of equipment to make the task achievable for the person… (RN)

Another participant suggested using alternative methods. She said, “We give them alternatives like if they don’t want to shower, maybe a sponge [bath] to make it easier for them” (RN). Another strategy was to prompt them to get into the shower as follows:

If they are problematic people, they just don’t want to do that. Sometimes if they were able to go into the shower, then you can sometimes ring them half an hour before and say, ‘We are coming in half an hour so you go and jump in the shower and I will do your dressing when you come back out’. So you are giving them some warning and prompting them to go and you have got a time that you will be coming, so their wound does not sit unexposed for a very long time. Sometimes that can make them go. (RN, FG1)

The third strategy was to, “Get the general practitioner involved” (RN) and to educate the client and explain to them the implications of having poor and good personal hygiene. One participant said:

Letting [them] know the negative implications for them every time they are refusing the shower and explaining that we are actually going to irrigate all their wounds out and therefore their wounds might heal a little bit better and be less risk of infection. So, sometimes it’s just letting them know the implication of not having good hygiene. (RN)

The next suggested strategy was building a rapport, because solving this type of issue requires time. One participant said:

Building up a rapport. Sometimes it is difficult with client who won’t agree initially, so sometimes it takes few weeks to build up a rapport with a client where they feel comfortable and then perhaps they will accept the services for shower. (RN)

Participants reported that client cooperation was important for home-visiting nurses, because providing good care required a balance between applying good clinical practices and client cooperation. One participant stated:

We don’t want to upset our clients, [but] we don’t want to see poor practice. There is that balance of making sure we educate them and not condone poor practice, but then not take away their independence and their rights…If they continue to want to fiddle with their wounds or stick their fingers in or whatever they doing, we really cannot stop it…We can try and influence the client; however, it is the client’s choice to live a lifestyle they want. (Jane)

Discussion

This study documented some of the environmental issues related to implementing infection control practices in CBHVN. The findings of this study clarified
that nature of the work environment and the availability of materials influenced the application of infection control practices in CBHVN. This finding was consistent with Kenneley (2010) who stated that maintaining infection control measures can be complicated in uncontrolled environments and chaotic with friends, families and pets around, as well as limited resources. The findings of this study identified three issues that influenced the nature of the work environment in CBHVN: environment hygiene, availability of proper facilities and material storage space. Lack of wound management resources was also identified as an issue in CBHVN. Important findings of the study suggested that client’s personal hygiene was a key factor that influenced providing better quality healthcare services to clients. The level of client’s personal hygiene may influence their health and their ability to recover.

The findings of the study suggested that policies of infection control did not always address the environmental issues in the community context. Home-visitng nurses, however, had to adopt those policies and try to apply them in the community context to provide proper care to their clients. Home-visitng nurses sometimes had to adapt to the environment around them and improvise and be creative with whatever clients were able to afford. Our study suggests that review infection control policies for applicability and feasibility for community context may provide the home-visitng nurses with a standard that is more practical for that context and reasonable guidelines on how to overcome those environmental issues.

This study revealed that that lack of availability of materials and equipment such as wound management materials and unclear policies of sharps disposal may have led home-visitng nurses sometimes to do dangerous practices. For example, when the clients was unable to provide a dressing kit for each visit, home-visitng nurses had to use the dressing pack twice or three times depend on their own clinical judgment and the assessment of the wound status. Another example was when home-visitng nurses had to give an injection to a client who do not own a sharps container. Then, they had to either recap the needle or place it in glass jar or milk box before disposing it in the rubbish bin. The strategy of disposal of sharps container was not always clear in CBHVN. Our study suggest to review of policies and procedures of sharps disposal and transportation to assist in preventing dangerous practice in community context and to provide alternative solutions when some essential materials for a procedure are not available.
Client education was important to the home-visiting nurses practising in the community context. It may increase client cooperation with regard application of infection control measures in home environment. Client education topics may cover several aspects such as important of environment hygiene, implication of poor personal hygiene on a personal health, the impact of compliance with infection control measures on health outcome. Client education may assist in improving clients’ health outcome. Our study suggests to include client education within the policies of client care. There was no study found that explored the role of client education in CBHVN to compare it with this findings.

Case study is considered a strong research method when a holistic, in-depth analysis is required (Baxter, 2008). Case study methodology enables in-depth investigation that provides understanding of a complex phenomenon, by describing the phenomena and exploring new issues and areas for development (Khon, 1977). Case study enabled the researcher to explore the challenges of implementing of infection control practices in four different CBHVN organisations. Examining multiple organisations allowed understanding the differences and similarities between organisations and provided richer information and stronger general analytical conclusions. The use of multiple data collection sources in a triangulated manner in case study is considered a major strength of this approach (Merriam, 1998a). The use of three different resources in this research ensured data triangulation and gave more detailed picture and more convincing conclusions about the challenges of infection control in CBHVN. Although case study is considered a good method to explore there are limitations, such as lack of generalisability. However, case studies enable “analytic generalisation” rather than statistical generalisation.

This study was conducted only in four not-for-profit CBHVN organisations in southeast Queensland and was limited to the Australian context. However, the findings could inform studies in other CBHVN organisations. Future research could investigate the applicability of infection control policies on community context to develop standard guidelines that addresses challenges and issues. Also, future research could explore other issues related to environmental context in a broader range of community context, such as countries with limited resources, and address those issues in the policies and guidelines.
Implications

The findings of this study showed that consideration of the issues within the environmental context is very important to assist home-visiting nurses to implement infection control practices in the community context. The nature of the work for home-visiting nurses in the community setting varied according to the clients’ socioeconomic statuses. Home-visiting nurses worked their best to provide optimum healthcare to their clients in less controlled environments with limited resources. Review and assessment of clients’ environment may assist in overcoming some of these environmental issues and help in applying infection control measures. For example, assessment of hand-hygiene facilities in clients’ homes, the cleanliness of the environment, and the client’s personal hygiene may give home-visiting nurses an idea about the nature of the work environment in that client’s home and may enable home-visiting nurses to discuss those issues with the client to try to come up with a solution that is acceptable for both of them. Moreover, providing home-visiting nurses with hand wipes in addition to alcohol-based hand rub may assist them to clean their hands when water is not accessible or when hand-washing facilities are inappropriate for use.

In addition, the findings of this study suggest that infection control policies were sensitive to, or cognizant of, the community context, especially when the community environment is a client’s home and clinicians have no control over it. For policies to be successful they must take into account the context to which they apply. Review of infection control policies for suitability and applicability in the community for home-visiting nurses particularly for materials and equipment, such as dressing kits and sharps containers, is important. Organisations could review policies of sharps disposal to clarify the strategies of sharps disposal, transportation and management.

Moreover, client education is essential for implementing infection control measures in clients’ homes. Developing educational materials for clients may assist in increasing clients’ cooperation with clinicians and improve health outcomes. Our study suggests including client education policy with respect to infection prevention and control could be improved. Client education should be encouraged and supported by CBHVN organisations, for example, providing clients with simple posters or brochures that demonstrate the important of hand hygiene and the impact of good personal hygiene on their health and the speed of their recovery.
Conclusion

In the community context, HAIs are preventable through implementing effective infection control practices. There are various risk factors in the community context that may affect implementing infection control practices. The policies need to be modified to address the challenges in the community context. More research is required to develop strategies for home-visiting nurses to overcome environmental challenges and evaluate the effectiveness of those strategies in the community context.
### Table 1–Type of accessed infection control documents

<table>
<thead>
<tr>
<th>Accessed documents</th>
<th>Topic guide</th>
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| **Infection control management documents** | • ICMP  
  • Responsibility of infection prevention and control programs  
  • Consultation processes  
  • Staff accessibility to infection control manuals  
  • Process of developing and evaluations IC manuals  
  • Reports on infection control committee meetings  
  • Infection prevention and control programs assessment tool for ICMPs  
  • Infection control program evaluation and feedback reports  
  • Evaluation reports and quality improvement plans |
| **Infection control policies for client care including manuals** | • Hand hygiene  
  • Standard precautions, transmission-based precautions and use of personal protective equipment  
  • Provision of intravenous therapy  
  • Infection control practices related to wound care, respiratory tract care and urinary tract care  
  • Application of clean and sterile technique  
  • Cleaning and disinfecting of medical equipment supplies and storage  
  • Handling and transport of medical waste management and laboratory specimens  
  • Needlestick injury  
  • Risk management and hazard management  
  • Management of needlestick injury  
  • Management of blood and body fluid spills  
  • Handling and disposing sharps  
  • Using body and blood spill kit  
  • Infection control equipment provided to staff |
| **Surveillance system** | • Definitions for HAIs  
  • HAIs Surveillance form  
  • Statistical records for HAIs  
  • Outbreak management plans  
  • Process to monitor and analyses HAIs  
  • Risk identification methods and quality improvement  
  • Clinical forms related to infection control, such as infection notification forms, initial client assessment form for infections |
| **Infection control education plan** | • Education materials related to infection control  
  • Education plan  
  • Topics included in orientation programs such as policies and procedures for client care role of surveillance in preventing infection and occupational health risks  
  • Strategies to provide education |
| **Occupational health** | • Initial assessment and health history  
  • Confirmation of immunity and provision of vaccines  
  • Initial and annual TB tests, as required  
  • Identification of occupational exposure and follow-up of non-blood-borne pathogen exposure  
  • Post-exposure prophylaxis for exposure to blood-borne pathogen  
  • Exclusion from patient care activities  
  • Surveillance for occupational health risks [risk and hazard management policy]  
  • Follow-up with staff exposed to infectious disease. |
Table 2 – Interviews and focus groups guide for managers and home-visiting nurses

<table>
<thead>
<tr>
<th>The interviews included the following topics:</th>
</tr>
</thead>
<tbody>
<tr>
<td>• Ensuring safe healthcare services and organisational infection prevention and control programs</td>
</tr>
<tr>
<td>• Organisational management strategies for monitoring and evaluating infection prevention and control programs</td>
</tr>
<tr>
<td>• Policies and procedures are available for infection control</td>
</tr>
<tr>
<td>• Strategies to monitor compliance with infection prevention and control programs</td>
</tr>
<tr>
<td>• Surveillance system for HAIs</td>
</tr>
<tr>
<td>• Processes for notifiable diseases and included diseases</td>
</tr>
<tr>
<td>• Processes for employee health and occupational hazard</td>
</tr>
<tr>
<td>• Process of education or training in infection control</td>
</tr>
<tr>
<td>• Assessing employee’s competency with regard infection control practices</td>
</tr>
<tr>
<td>• Equipment related to infection control provided to staff</td>
</tr>
<tr>
<td>• Providing infection control consultation to employees</td>
</tr>
<tr>
<td>• Management of clinical wastes and sharps disposal</td>
</tr>
<tr>
<td>• Mechanisms for reporting any feedback to employees</td>
</tr>
<tr>
<td>• The role of client education in implementing infection prevention and control programs in CBHVN</td>
</tr>
<tr>
<td>• The role of the infection control professional in developing and implementing infection prevention and control programs</td>
</tr>
<tr>
<td>• Challenges of developing and infection prevention and control programs and plans in CBHVN</td>
</tr>
<tr>
<td>• The strategies used by home-visiting nurses to overcome the challenges of implementing infection prevention and control programs</td>
</tr>
</tbody>
</table>

Table 3 – Description of the four not-for-profit organisations

<table>
<thead>
<tr>
<th>Services provided by the organisations</th>
<th>Wound care</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Palliative care</td>
</tr>
<tr>
<td></td>
<td>Post-acute care</td>
</tr>
<tr>
<td></td>
<td>Personal care</td>
</tr>
<tr>
<td></td>
<td>Social support</td>
</tr>
<tr>
<td></td>
<td>Allied health services</td>
</tr>
<tr>
<td>Staff qualifications</td>
<td>Youth services</td>
</tr>
<tr>
<td></td>
<td>Counselling</td>
</tr>
<tr>
<td></td>
<td>Aged care</td>
</tr>
<tr>
<td></td>
<td>Emergency relief and disability services</td>
</tr>
<tr>
<td>The organisations employed various types of specialties including:</td>
<td>Registered nurses</td>
</tr>
<tr>
<td></td>
<td>Disability support</td>
</tr>
<tr>
<td></td>
<td>Occupational therapists</td>
</tr>
<tr>
<td></td>
<td>Personal carer</td>
</tr>
<tr>
<td></td>
<td>Physiotherapist</td>
</tr>
<tr>
<td></td>
<td>Mental health nurses</td>
</tr>
</tbody>
</table>

Table 4 – Demographic data of the participants

<table>
<thead>
<tr>
<th>Participants (n=28)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Age (years)</td>
</tr>
<tr>
<td>18–42</td>
</tr>
<tr>
<td>43–66</td>
</tr>
<tr>
<td>Gender</td>
</tr>
<tr>
<td>Female</td>
</tr>
<tr>
<td>Male</td>
</tr>
<tr>
<td>Experience in CBHVN</td>
</tr>
<tr>
<td>1–15 years</td>
</tr>
<tr>
<td>16–31 years</td>
</tr>
<tr>
<td>32–46 years</td>
</tr>
<tr>
<td>Highest qualifications</td>
</tr>
<tr>
<td>Diploma degree</td>
</tr>
<tr>
<td>Bachelor degree</td>
</tr>
<tr>
<td>Master degree</td>
</tr>
<tr>
<td>Others</td>
</tr>
<tr>
<td>Current job</td>
</tr>
<tr>
<td>RN</td>
</tr>
<tr>
<td>EEN</td>
</tr>
<tr>
<td>Managers</td>
</tr>
</tbody>
</table>
CHAPTER 7 - CROSS-CASE REFLECTIONS, RECOMMENDATIONS AND CONCLUSION

This chapter provides a reflection on the findings of the four cases in this study expressed in the form of discrete papers in Chapter 6. In doing so, it draws on the background problem and the aim of the study and provides a salient summary of findings of the study from which recommendations are made.

Recounting the purpose and aims of the study. As outlined in Chapter 1, the rapid expansion of the CBHV industry has meant that setting-specific standards for providing high quality and safe healthcare, such as those related to infection prevention and control, are underdeveloped. Concerns have been raised because the current standards for CBHV are reliant mostly on hospital standards, which may not be ideally suited for the community context and the challenges that lie therein. Infection prevention and control programs should be context-specific. That is, they must relate directly to the environment in which the care is provided. There was little published research regarding how infection prevention and control programs are structured and implemented in the community context. Published studies that have examined infection prevention and control in the community context have been undertaken as part of a community setting such as a day care and long-term healthcare. Few published studies have explored the structure and operation of infection prevention and control programs in CBHV. The research problem and the ensuring literature review identified the need to explore the structure and processes of infection prevention and control programs in CBHV to identify the structures and process by which they operate. The aim of the study was to determine what infection prevention and control programs govern CBHV in Australia, and to understand how they operate. In doing so, the study identifies the challenges of implementing infection prevention and control programs in the community context.

Yin’s (2009) exploratory multiple-case study approach was used to answer the research question. Donabedian’s theory (2005) was adopted as a theoretical framework for the study. The cases were CBHV organisations and the context was southeast Queensland, Australia. Data was collected according to the previously identified infection control elements in the literature and reviewed as in the data-gathering plan in Chapter 3. Data was collected across four participating CBHV organisations.
Following this, a cross-case analysis was conducted to examine how each case was unique and how cases were similar to each other. The analysis reported the structure, processes and mechanisms of evaluation of infection prevention and control programs. In Chapter 4, six essential elements for infection prevention and control programs for CBHVN were identified. Issues and challenges with regard implementing infection control in CBHVN were also identified and discussed with participants to bring out suggestions for solutions, as reported in Chapter 5. Following this, findings (current practices) were compared to the previous literature (best practices) according to the six identified infection control elements as reported in Chapter 6, and a new framework developed. The framework provides guidelines for CBHVN organisations to establish infection prevention and control programs that are appropriate to their needs. The framework includes a recommendation for the structure of infection prevention and control programs which defines the essential elements that must be included in any infection prevention and control programs for CBHVN, and informs important infection control strategies that need to be included in each element. The framework is provided in this chapter in the recommendations.

**Summary of the significant findings**

In this study, infection prevention and control in CBHVN was generally informally structured. The processes of implementing infection prevention and control mainly depended on educating staff on basic infection control practices. There were no documented formal infection control management plans. Managing infection control within the organisations was designated to staff members to oversee infection control matters. One case had an identified structure for infection control management that included a committee and network of expertise. The other three cases designated one person to manage infection control, who had a clinical background, but were not certified in infection control. There was limited number of infection control professionals employed to manage infection control. Managing infection control issues inside the CBHVN branch was usually integrated within the role of the branch manager in three cases. In one case, there was a designated person to oversee infection control activities and issues in each branch. Consultation processes with regard to daily infection control issues varied among cases because of the variation in responsibility for infection control. Generally, home-visiting nurses called the office to ask their
colleagues, CNCs or the branch manager for advice or called a specialised
government resource, such as an infectious disease unit or wound management clinic. In
one case, staff directly contacted the designated infection control person. A common
strategy used by all four cases was that complex problems were referred by the branch
manager or the designated infection control person to a higher authority, such as the
head of home-care services or the infection control committee. Monitoring staff
performance was used by the four cases to monitor their practices. Staff performance
was reported to the branch manager, but not to the higher authorities such as the head of
home-care services. In one case, staff performance was reviewed unofficially by the
designated infection control person during a consultation session, but it was not
documented in the staff file.

Evaluation of infection control in CBHVN was a challenge. There were limited
tools available to evaluate infection control in CBHVN. Generally, the strategies used to
monitor and evaluate infection control were as follows: monitor staff compliance with
infection control training and hand-hygiene competencies and clients’ feedback. An
infection control audit form was used in one case. The audit was used to assess staff
knowledge on infection control policies. Staff-review performance processes were used
to monitor staff compliance with infection control practices in all cases. Generally, staff
performance was used to identify knowledge gaps of staff rather than evaluating
infection control in CBHVN.

Eight key infection control policies are relating to client care in CBHVN were
identified, not all of which were present for each case. The policies included: (i) hand
hygiene; (ii) standard and transmission-based precautions; (iii) aseptic technique; (iv)
sharps management; (v) waste management; (vi) spill management; (vii) specimens
collection and transportation; and (viii) client education. Some of the organisations had
manual for infection control, while in others infection control policies were integrated
with the workplace health and safety policies. Some of the infection control practices
were not addressed in the policies such as transporting and handling pathology
specimens, catheterisation, and management of intravenous therapy. Some of the
policies for infection control were not applicable for CBHVN due to environmental
issues. For example, disposal of sharps was an issue especially when the home-visiting
nurses had to administer an injection or use a needle in unexpected situations and a
sharps container was not available. Policies and procedures were not always reviewed
for their suitability for the community context. One case had a strategy to ensure the
applicability of the policies to the community context by asking a designated home-visiting nurse to provide feedback every time the policies were reviewed. Client education was important for assisting home-visiting nurses to implement infection control practices in clients’ homes. Client education was not a standard element or policy in all organisations. Only one case mentioned client education briefly in their policies.

Implementing infection control in CBHVN depended mainly on education. All the cases had an initial and periodic training for infection control. The content of infection control orientation of staff included basic infection control practices. The education materials were particularly focused on hand-hygiene practices, standard precautions, and management of needlestick injury. Education programs for infection control did not always address infection control practices related to the community context such as the role of surveillance in preventing infections and handling and transporting laboratory specimens. Limited tools were available to assess infection control practices of home-visiting nurses in the community context, especially clinical practices. Clinical practices of the home-visiting nurses were assessed by a staff performance assessment where the home-visiting nurses were accompanied by a senior nurse to assess their clinical practices. The responsibility for infection control education and following up staff compliance with annual infection control training was integrated with other staff roles such as the branch managers or the educational officers. In one case, it was the responsibility of the designated person for infection control.

In all four cases, the organisations did not require staff to inform them of any infectious diseases they had. However, the organisations expected that staff would notify and report about any infectious diseases they had. Proof of current medical health status or vaccination status was not required. The current staff health policies in CBHVN generally included health status, immunisation and management of exposure to blood and body fluid. Some more comprehensive issues were not addressed in some CBHVN organisations, such as client health, pregnant staff, and staff allergies, work restrictions and outbreak management. There were some challenges identified with sharps disposal and transportation of pathology samples in occasional circumstances.

HAIs were informally monitored and reported in CBHVN. Wound infections were monitored in one case. At the end of each month, the infection control person
would track and trend those collected data. Actions taken were mainly related to developing a wound management plan and providing education to staff if a gap in knowledge was identified. Reports from surveillance were not reported to the higher authorities, such as an infection control committee or the head office. Surveillance was only reported internally within the branch. In another case, infections were monitored through an incident report form. Action with regard to the reported infection was taken locally by the branch manager of the CBHVN. Infections were reported to the head office using an incident report form. Every three months a designated person would monitor and track the trends of those infections to identify the infection rate in each branch. In the other two cases, infections were monitored through the client progress notes or the wound management forms. Infections were followed up and monitored by the primary nurse and the treating team for the purpose of treating that client for infections. The infection rates were not monitored or reported to the head office in those two cases. The challenges of conducting HAIs surveillance in the community context included: lack of guidelines for establishing surveillance system, lack of definitions for HAIs, limited tools to collect data on HAIs, and a limited number of infection control specialists employed to carry out surveillance activities.

Infection control policies were not always applicable for the community context especially given that the community environment was usually client home and the clinicians had no control over it. Three challenges that home visiting nurses faced when implementing infection control in the community context were identified. The first challenge was the nature of work environment, which was influenced by three issues: cleanliness of the client’s home environment, availability of proper hand-washing facilities and the storage space for the products. The second challenge was availability of infection control equipment, including unavailability wound management materials and sharps disposal containers. The last challenge was clients’ personal hygiene. The policies are required to be modified to address the challenges in the community context and to provide alternative strategies and suggestions for home-visiting nurses when the proper materials and equipment such as dressing kits and sharps containers are not available or when best practice is not an option.

Limitations of the study

Case study is considered a strong research method when an holistic, in-depth analysis is required (Baxter, 2008). Case study methodology enables in-depth investigation that provides an understanding of a complex phenomenon, by describing
the phenomena and exploring new issues and areas for development (Khon, 1977). Case study enabled the researcher to explore the structure, processes, and mechanism of evaluation of infection prevention and control programs in CBHVN, and identify the challenges of implementing of infection control practices in four different CBHVN organisations. Investigating various organisations enabled exploration of a range of different infection control structures and processes and examination of different infection control management plans within the community context. Examining multiple organisations allowed an understanding of the differences and similarities between organisations and provided richer information and stronger general analytical conclusions. The use of multiple data collection sources in a triangulated manner in case study is considered a major strength of this approach (Merriam, 1998a). The use of three different resources in this research ensured data triangulation and gave a more detailed picture and more accurate and convincing conclusions about the research inquiry.

Although case study is considered a good method to explore a phenomenon, the commonly reported limitation is the lack of generalisability (Stake, 1995). However, case studies enable “analytic generalization” (Yin, 2003, p. 10) rather than statistical generalisation (Yin, 2003). To achieve analytic generalisation, multiple-case design was used in this study. Four home visiting agencies participated in this study. Each organisation was the subject of an individual case study, but the study as a whole covered all four agencies. Conceptual theory was developed for this study, which was adopted form Donabedian’s theory (2005). After that, a data collection plan was designed. Then, four different case studies were conducted. This was followed by reporting each case study individually. Finally, a cross-case analysis was conducted to write a cross-case report and to provide recommendations for a framework to structure infection control programs in CBHVN.

The main limitation of this study was that it was conducted in only four not-for-profit CBHVN organisations in southeast Queensland and was limited to the Australian context. However, the findings could inform studies in other CBHVN organisations or inform developing infection control programs in other countries with a similar context or circumstances, such as limited access to resources or with less than ideal environment. Future research could investigate the applicability of infection control
policies in the community context to develop standard guidelines that addresses challenges and issues. Also, future research could explore other issues related to environmental context in a broader range of community contexts, such as countries with limited resources, and address those issues in the policies and guidelines.

**Recommendations**

The findings of the study assist in identifying six main elements to develop infection prevention and control programs in CBHVN. The recommendations in this study are provided according to those six identified elements.

**Governance of infection control**

- CBHVN organisations should review their infection prevention and control programs to ensure that they are consistent with the current guidelines and requirements.
- Each healthcare setting is required to have an ICMP to identify the infection risks at the facility and detail the measures to be taken to prevent or minimise the risks. The ICMP should be tailored to the CBHVN services and context to ensure proper implementation of their infection preventions and control programs.
- CBHVN organisations should develop tools to evaluate infection prevention and control programs to ensure they are providing high quality and safe healthcare services.
- CBHVN organisations should establish infection control committees, with members from different multidisciplinary areas such as quality management, workplace health and safety, managers of personal carers. Membership of this committee could be expanded or contracted according to the organisation’s requirements and size.
- The infection control committee should be constituted and serve as an expert reference group for infection control issues and problems. Also, the committee should provide expert opinions when establishing guidelines to ensure a safe working environment based on current best-practice standards and regulations.
- Infection control should be managed by an infection control professional who has a health science background and is certified in infection control. This person should serve as a leader for infection prevention and control program for the whole organisation.
The responsibilities of the infection control professional should include: developing, reviewing and evaluating ICMPs (ii) developing, reviewing and implementing policies and procedures (iii) surveillance (vi) planning infection control education (v) collaborating with workplace health and safety to develop strategies to address the risk of disease transmission to staff (vi) monitoring and evaluating infection prevention and control program (vii) consulting about infection control issues (viii) conducting, participating and applying relevant research findings.

Each CBHVN branch should assign a designated person to conduct daily infection control activities, to serve as a mentor, educator, consultant and role model for other staff. This staff member will feed back infection control issues to the infection control professional of the whole organisation. The responsibilities of this person include: conducting surveillance, implementing infection control policies and procedures; providing infection control education to clients and staff; evaluating and following up employee exposures, providing consultation about infection control issues to the staff, providing feedback on infection control issues to infection control professional in the head office, and disseminating information about infection control to staff.

Infection control policies and procedures for client care

- Infection control policies and procedures for client care should be comprehensive to address all the clinical practices related to infection control to ensure client and staff safety.
- Policies and procedures should be reviewed over a specific period and be examined for applicability and feasibility to the community context to ensure they are compatible with the current evidence-based practices.
- Policies should address the challenges in the community context to provide alternative strategies for situations when an ideal environment is not achievable and when resources are limited.
- Home-visiting nurses should be provided with a flowchart or pocket guideline that is designed for the community context to provide them with fast access to information about how to deal with common challenges while they are in the field.
- Client education should be considered and included in the infection control policies for client care in the community context. Organisations should consider developing and providing education materials for community-based clients to assist home-visiting nurses to implement infection control practices in the home environment and to increase clients’ cooperation.

### Education and staff training

- CBHVN should assign a designated person within the organisation for infection control to ensure that topics in the infection control orientations and ongoing staff development address the essential practices related to the infection control program to provide home-visiting nurses including infection control standards in the organisation.
- CBHVN organisations should use a range of educational strategies and link education and training with evidence-based practices of infection control to assist in delivering infection control messages to staff in various ways.
- CBHVN organisations should evaluate the outcomes of education programs on staff clinical practices to ensure staff knowledge and competencies with infection control practices.
- CBHVN organisations should conduct and participate in research projects. For example, conduct in-field observation studies of home-visiting nurses’ practice to develop assessment and evaluation tools that are relevant to community context.

### Staff health and safety

- CBHVN organisations should assign a designated person for infection control within the organisation to ensure that policies of staff health are comprehensive and ensure staff safety in the community context.
- CBHVN organisations ensure that staff safety policies are practical for the community context to minimise the occurrence of dangerous practices.

### Surveillance system

- CBHVN organisations should establish local surveillance system for HAIs to identify risk and evaluate prevention strategies and to establish benchmarks to compare with local CBHVN organisations in Queensland.
- CBHVN organisations should employ an infection control expert to carry out surveillance activities.
• CBHVN originations should initiate and participate in research projects. For example, research into surveillance definitions to assist in developing standard definitions for community context.

**Environmental context**

• CBHVN organisations should assess clients’ home environments to identify the difficulties and challenges related to implementing infection control measures.
• CBHVN organisations should review infection control policies for their applicability and suitability for the community context.
• CBHVN organisations should ensure infection control policies and guidelines address the challenges in community context and provide alternative strategies for clinicians when best practice is not possible or when there is lack of facilities and equipment.
• CBHVN organisations should encourage and support clients’ education and provide education materials for clients such as posters and booklets to assist in improve clients’ cooperation and health outcomes.

**Conclusion**

The study explored infection prevention and control programs that govern CBHVN and how they operate and informed the current issues, approaches and strategies used for management of infection prevention and control programs and the study informed the development of a framework that is designed for community context. The role of infection control programs is considered to be essential in providing safe healthcare to clients. Therefore, each CBHVN organisation must be committed to providing a safe work environment, comprehensive workplace training, and education in occupational health and safety and injury management. Infection prevention and control programs were informally structured in CBHVN. There was no formal infection control management plan documented and no reference to the legislative requirements. There was a limited number of infection control professionals employed in CBHVN.

Six main elements that comprised infection prevention and control programs in CBHVN were identified from the findings of this study. Recommendations to establish infection prevention and control programs were developed according to the six identified elements in findings of this study. This study highlighted the challenges and
the issues that home-visiting nurses faced while implementing infection control practices in the community context. Challenges related to implementing infection control were not addressed in the available infection control policies and procedures. Addressing these challenges when developing policies and procedures and establishing infection prevention and control programs for the community context is essential. Future research is required to develop infection prevention and control programs and guidelines that are more practical, reasonable and applicable for home-visiting nurses and that are more appropriate for community-based context.
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APPENDICES

Appendix 1 — Human Research Ethics Committee (HREC) approval.
Appendix 2 — Invitation Letter.
Appendix 3 — Project information sheet and consent form (AGENCY).
Appendix 4 — Ethic approval (Organisation A).
Appendix 5 — Ethic approval (Organisation B).
Appendix 6 — Ethic approval (Organisation C).
Appendix 7 — Ethic approval (Organisation D).
Appendix 8 — Poster for promoting the project.
Appendix 9 — Participant information (Individual interview) and consent form.
Appendix 10 — Participant information (Focus group) and consent form.
Appendix 11 — Document checklist and List of question to guide analysing documents data collection
Appendix 12 — Individual interview: Managers and infection control coordinators
Appendix 13 — Individual interview: Home visiting nurses.
Appendix 14 — Follow-up interview guide with managers.
Appendix 15 — Focus group guide.
Appendix 16 — Research Log.
Appendix 17 — Interview and focus groups log system
Appendix 1 – Human Research Ethics Committee (HREC) approval

GRiffITH UNIVERSITY HUMAN RESEARCH ETHICS COMMITTEE

26-Jun-2012

Dear Prof St John,

I write further to your application for ethical clearance for your project “Pull Review: Infection prevention and control programs in community-based home visiting nursing in Southeast Queensland, Australia: A case study” (GU Ref No: NES/21/12/HREC).

Provision of appropriate approvals from the participating organisations. However, you may be authorised to commence the research once the other conditions outlined here have been addressed.

Regards

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At this time all researchers are reminded that the Griffith University Code for the Responsible Conduct of Research provides guidance to researchers in areas such as conflict of interest, authorship, storage of data, and the training of research students.
You can find further information, resources and a link to the University’s Code by visiting http://www2.gru.edu.au/policylibrary.nsf/xupdate/month/a7852d2263312b44a2575c00e2f457?opendocument

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Appendix 2 – Invitation letter

INVITATION LETTER

Project Title: Infection Prevention and Control Programs in Community-Based Home Visiting Nursing in Southeast Queensland, Australia: A Case Study

Investigators:
- Assoc. Prof Wincombe St John, Principal Supervisor, School of Nursing & Midwifery
  Telephone: 07 55289353, Email: w.stjohn@griffith.edu.au
- Assoc. Prof Ramon Shaban, Associate Supervisor, School of Nursing & Midwifery
  Telephone: 07 33821271, Email: r.shaban@griffith.edu.au
- Ms. Ohood Felemban, PhD Candidate, School of Nursing & Midwifery
  Telephone: 0492284099, Email: ohood.felemban@griffith.edu.au

Dear,

We would like an opportunity to meet with you to discuss an exciting project investigating infection prevention and control programs and plans for home visiting nursing.

We know that home visiting nursing agencies in Queensland are required to develop infection control programs and plans. Most programs and plans have been developed in acute settings, so the issues related to community settings have not been addressed. Our project will investigate the specific issues related to infection prevention and control programs in community-based home visiting nursing with the aim of developing an appropriate framework for community-based infection prevention and control programs and plans.

Ms Ohood Felemban will be conducting the research project for her PhD at Griffith University. Ms Felemban has a nursing background with experience in infection control in the community.

You are being invited to participate in this study because you are a highly regarded home visiting nursing agency. We hope that the findings of the study will provide recognition of your organization’s excellence and enable you to lead your organization into continuing excellence in home and community care.

We look forward to an opportunity to discuss our project with you.

Kind regards,

Wincombe St John.
Appendix 3 – Project information sheet and consent form (AGENCY)

PROJECT INFORMATION AND CONSENT FORM (AGENCY)

Project Title: Infection Prevention and Control Programs in Community-Based Home Visiting Nursing in Southeast Queensland, Australia: A Case Study

Investigators:
- Assoc. Prof Winsonne St John, Principal Supervisor, School of Nursing & Midwifery
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- Ms Ohood Felemban, PhD Candidate, School of Nursing & Midwifery
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PART A: PROJECT INFORMATION

Why is this research being conducted?
Healthcare-associated infections (HAIs) are infections that an individual acquires while receiving therapy, treatment or care in a healthcare setting. Many studies show that HAIs negatively affect patients and their health outcomes, and incur significant economic costs. A well-established infection control program is fundamental to preventing healthcare-associated infections.

In recent times, the rapid expansion of the home and community-based healthcare industry has meant that standards required for ensuring high quality and safe healthcare, such as those related to infection control, are underdeveloped. Community-based home visiting nurses experience particular challenges with respect to HAIs including working in unstable environments and limited access to finite help and resources. Clients are often clinically vulnerable to infections as a result of complex, chronic conditions. Current standards for practices in infection control originate from hospital-based settings. Infection control guidelines and management frameworks that are hospital-based may not be ideally suited for the challenges that lie within the community context. Therefore, there is a need to develop a framework for infection prevention and control programs and plans that are tailored for the community context.

The aim of this study is to understand existing infection control programs in home visiting organisations, and to determine how they operate to prevent HAI. We want to understand what these programs are comprised of and how they operate. We particularly want to understand the difficulties faced by agencies and home healthcare nurses in implementing infection prevention and control programs and plans. This knowledge will inform better solutions for improving infection prevention and control strategies for your agency and other community-based home visiting nursing agencies.

Understanding the structure and function of infection control programs and plans will inform development of a contemporary overarching framework to guide infection prevention and control programs for community-based home visiting nursing in a community context. This framework will contribute to high quality and safe healthcare for clients in community context.

What you will be asked to do?
Each component of the research study will have its own recruitment and consent process. Consent will be sought from agency managers and participants for each component of this study.

The project will involve document review, interviews, focus groups and observation. If your agency agrees to participate, we will require an access to documents, people, and places that are related to infection prevention and control in your agency as follows:
- The documents we need to review are those related to your agency’s infection control program and management plan. We do not want to access any client records, although we will be interested in the clinical forms you use. We will only access documents you approve, as documents will be listed in part C of the consent form.
- We will need to contact and interact with people in your agency who are responsible for implementing infection control in order to interview them. As well as community home visiting nurses and any other professionals who provide direct care to your clients. We will ask them questions about their practice in community/home healthcare, focusing on infection control. We will request to meet staff of your
agency at a meeting (such as a normal staff meeting) to provide them with information about the study and invite them to participate. We will also ask to meet the person who manages infection control at your agency to invite him/her to participate in the study as well.

- There may be particular infection control processes and practices that we would like to clarify by doing some observation. If we identify that observation would be useful, we will negotiate separate approval with your agency’s management. We will only observe infection control processes that you approve, which will be listed in part D of this consent document.

- Once we have collected document, interview and observation data and carried out preliminary analysis, we would like to do some focus groups. At the focus groups we will discuss issues about infection control programs and processes that have arisen from initial analysis. The focus groups will be an opportunity to explore issues and identify solutions, which will be very important for informing development of a framework for infection prevention and control in a community setting.

We will request to meet staff who provide patient care in your agency at a meeting (such as a normal staff meeting) to invite them to participate in a focus group discussion within your agency. There will also be separate focus group discussions for the managers or infection control coordinators of all participating agencies. If we find that people are unable to participate in focus groups, we will ask them if they would prefer to participate in a follow-up interview instead.

We are hoping to recruit up to four agencies into the project. All information provided will be confidential and none of the participating agencies will be identified directly in the final report or publications. To protect the privacy of both participants and organizations we will be collecting information from all participating agencies prior to providing you with results or publication.

The expected benefits of the research
This study will provide information about how current infection control programs and plans operate in community-based home visiting nursing. It will identify and explore the challenges that community health care providers encounter with regard to implementing infection control programs and plans in the community context. This information will assist managers of home care agencies in developing, managing, and improving their infection control programs. The results of this study will also inform the work of nurses working in a community context: agencies, managers, infection control specialists, stakeholders and policy makers who seek to provide safe and high quality care to clients receiving home healthcare nursing services.

Risks to you
There are no foreseen major risks to your agency and participants by participating in this low-risk study. The risks are minimal and are no greater than those associated with everyday practice. There is a possibility that your agency’s reputation might be affected if findings were negative and your agency was identifiable. This is unlikely, but may occur if your agency has particular or unique infection control structures or processes. As such as possible, care will be taken to remove any information that could identify individual agencies and participants. Furthermore, strict confidentiality will be maintained and only the research team will have access to the raw data. More than one agency will be invited participants in this study and all results will be de-identified and aggregated before results are provided as feedback or published. These processes mean that the risk of an organization or participant being identified is very low. We suggest that these risks are far outweighed by the anticipated benefits, which will contribute to understanding of how infections are prevented and controlled within a home visiting nursing context. The result of this study will inform development of a framework for infection prevention and control programs and plans for community-based home visiting nursing.

Your confidentiality
- The information provided in this study will be treated with complete confidentiality. The only exception to this is the unlikely event of the researcher being guilty to acts that are legislatively required to be reported to a relevant authority within the jurisdiction.

- All data will be stored according to the National Health and Medical Research Council (NHMRC) Australian Code for the Responsible Conduct of Research. Access to all data sets will be limited to the three named investigators in this study. Access to the data will be restricted by electronic passwords known only to members of the research team. Similarly, electronic data files of recordings will be
password encrypted and stored on a confidential electronic drive that only the named researchers will have access to.

- Audio data will be retained until data analysis is complete. Once data analysis is complete, all audio recordings will be destroyed. The recordings will be used for the sole purpose of data analysis and will not be utilized for any other purposes, including presentation. Data recordings will not be used for conference presentations or for instructional purposes.

- Strict confidentiality will be maintained in this study. The conduct of this research involves the collection, access and/or use of identified personal information. The information collected is confidential and will not be disclosed to third parties without consent, except to meet government, legal or other regulatory authority requirements. For further information consult the University’s Privacy Plan at www.griffith.edu.au/ua/aas/pc/pp or telephone (07) 373 55585. Only the research team will have access to the raw data that will be collected in this study. All data will be de-identified early in the study. The information collected about individual participants and agencies will only be reported in aggregate form. The results will be published as part of a doctoral thesis, in peer-reviewed journals presented at conferences, and reported to participating agencies. These publications will not include any readily identifiable information.

Participation
Participation in this research is voluntary. Your agency is free to withdraw at any time, without comment or penalty.

Questions/further information
For further information, concerns or questions about this study you may contact Associate Professor Winsome St John, Associate Professor Ramon Sahib and Mr. Ghaddar Feraldim at their telephone numbers, which were provided at the beginning of this information sheet.

Research results
The report of final results and findings of the study will be provided to participating agencies. We hope to publish the results of our study in a nursing or healthcare journal. The research will yield information about infection prevention and control programs for community-based home visiting nursing and inform developments of a framework for infection prevention and control programs in the community context, for organizations to adopt. Our results may also be forwarded to appropriate government and healthcare agencies to assist policy development. If you do not wish to receive information about the results of the study, please inform us and we will not provide you with a synopsis of the study when it is completed.

Ethical conduct of this research: This Project has been approved by the Griffith University Human Ethics Committee and is being conducted in accordance with the National Statement on Ethical Conduct in Human Research (NHMRC, 2007). You may contact Winsome St John on (07) 5552 8935 or w.stjohn@griffith.edu.au if you have any questions about the conduct of this study that you wish to discuss. If you have any concerns or complaints about the ethical conduct of the research project you can contact the Manager, Research Ethics Office for Research, Bray Centre, Griffith University, Kessels Road, Nathan, Qld. Telephone (07) 373 55585. research-ethics@griffith.edu.au
Part B- CONSENT FOR AGENCY PARTICIPATION

Project Title: Infection Prevention and Control Programs in Community-Based Home Visiting Nursing in Southeast Queensland, Australia: A Case Study

Investigators:
- Assoc. Prof Wincombe St John, Principal Supervisor, School of Nursing & Midwifery
  Telephone: 07 33828935, Email: w.stjohn@griffith.edu.au
- Assoc. Prof Ramon Shaban, Associate Supervisor, School of Nursing & Midwifery
  Telephone: 07 33821271, Email: r.shaban@griffith.edu.au
- Ms. Ohood Felemban, PhD Candidate, School of Nursing & Midwifery
  Telephone: 0432284009, Email: ohood.felemban@griffith.edu.au

I, ...................................................................................................................... (agency name) to participate in the research project entitled “Infection Prevention and Control Programs in Community-Based Home Visiting Nursing in Southeast Queensland, Australia: A Case Study”, as outlined in the information sheet. By signing below, I confirm that I have read and understood the Participant Information sheet and Consent Form and in particular have noted that:

- I understand that my agency’s involvement in this research will include providing negotiated access to infection control documents and staff who are working in my home visiting nursing agency and places;
- I understand that further negotiation with agency administration will occur and consent sought to access to specific documents and places for observation;
- The details of the research procedures and any risks involved have been explained to my satisfaction;
- I have had any questions answered to my satisfaction;
- I understand the risks involved;
- I understand that there will be no direct benefit to my agency from participation in this research;
- I understand that my agency participation in this research is voluntary;
- While the information gained in this study will be published as explained, my agency and my staff will be de-identified as much as is possible, and individual information will remain confidential;
- I understand that if I have any additional questions I can contact the research team;
- I understand that I am free to withdraw my agency at any time, without comment or penalty;
- I understand that I can contact the Manager, Research Ethics, at Griffith University Human Research Ethics Committee on 3735 5585 (or research-ethics@griffith.edu.au) if I have any concerns about the ethical conduct of the project, and
- I agree for my agency to participate in the project.

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<tr>
<th>Names</th>
<th>Signatures</th>
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<tr>
<td>Agency manager:</td>
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<td>Researcher:</td>
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<td>Witness:</td>
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Part C: CONSENT FOR DOCUMENTS REVIEW

Project Title: Infection Prevention and Control Programs in Community-Based Home Visiting Nursing in Southeast Queensland, Australia: A Case Study

Investigators:
- Assoc. Prof Winsome St John, Principal Supervisor, School of Nursing & Midwifery
  Telephone: 07 55259356, Email: w.stjohn@griffith.edu.au
- Assoc. Prof Ramon Shaban, Associate Supervisor, School of Nursing & Midwifery
  Telephone: 07 33821271, Email: r.shaban@griffith.edu.au
- Ms. Ohood Feleumun, PhD Candidate, School of Nursing & Midwifery
  Telephone: 0452254099, Email: ohood.feleumun@griffithuni.edu.au

I hereby give my consent for the researchers to access the below-mentioned infection control documents that are related to my agency as requested by them as a part of participating in the research project entitled "Infection Prevention and Control Programs in Community-Based Home Visiting Nursing in Southeast Queensland, Australia: A Case Study". Documents such as infection control policies and procedures, management plans, surveillance systems, statistical reports, feedback reports, and evaluation reports will be included. By signing below, I confirm that I have read and understood the Participant Information and Consent Form and agree to give access to the below-mentioned documents. I understand that notes will be taken and if copying of documents is necessary, that will be specifically negotiated with myself (agency manager) as outlined below:

1. ........................................................................ Copy approved: Yes/No, Sign ..............
2. ........................................................................ Copy approved: Yes/No, Sign ..............
3. ........................................................................ Copy approved: Yes/No, Sign ..............
4. ........................................................................ Copy approved: Yes/No, Sign ..............
5. ........................................................................ Copy approved: Yes/No, Sign ..............
6. ........................................................................ Copy approved: Yes/No, Sign ..............
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15. ........................................................................ Copy approved: Yes/No, Sign ..............
16. ........................................................................ Copy approved: Yes/No, Sign ..............
17. ........................................................................ Copy approved: Yes/No, Sign ..............
18. ........................................................................ Copy approved: Yes/No, Sign ..............
19. ........................................................................ Copy approved: Yes/No, Sign ..............

* I also understand that another request will be made if the researchers wish to review documents other than the above-mentioned documents.

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<tr>
<th>Agency manager:</th>
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<td>Witness:</td>
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Appendix 4 – Ethic approval (Organisation A)

Date: 25.09.2012

Dear Ohood Felemban,

Re Project: Infection prevention and control programs in community-based home visiting nursing in Southeast Queensland, Australia: A case study.

This letter communicates our support for the aforementioned project which we understand is to be conducted by yourself as your thesis study which you aim to complete by June 2014.

We understand the focus of your study will be with both Brisbane Metro Home Care offices at Logan and Eight Mile Plains as well as with Care Service Department at the Corporate office at 301 Wickham Street, Fortitude Valley.

We would ask to receive a report of your project upon completion. I encourage you to contact me at any point throughout your contact with us, should you wish to discuss or clarify any issues.

With regards,

[Signature]

J. Marshall
Clinical Research Coordinator.
RSL Care.
Appendix 5 – Ethic approval (Organisation B)

14 November 2012

Prof Winsonc St John
Griffith University
School of Nursing & Midwifery
Gold Coast
SOUTHPORT Q 4222

Dear Professor St John

Re: Infection, prevention & control programs in community-based home visiting nursing in SE Qld, Australia: a case study

I refer to your application with regard to the above project, which was put before the Human Research Ethics Committee Anglicare Southern Qld and approved. This approval was given on the basis that there may be a request for you to meet the cost of a proportion of staff time required to ensure the project can proceed appropriately.

Perhaps you could estimate the amount of staff time required e.g. that of Registered Nurses required for the successful conclusion of this project. We do wish to be as cooperative as possible in any approved research project but there are of course sometimes considerable costs to the organization.

It was noted that the project was due to commence on 1 March 2012 and conclude on 30 June 2012. Should there be any amendment to the study date of the project I should like to be advised immediately on 3893 5152. Further, should there be any problems arising noted by you during the course of the project I should be pleased if you would advise me immediately and I shall ask Mrs Jennifer West, Vice Chairman of the Committee, to contact you.

We would need to receive a progress report from you in May 2013, with 6 monthly reports thereafter until the conclusion of the project.

At the end of the project the Committee requires that you submit a full report of the project for their information before making any arrangements for publicity of any kind for the project.

With best wishes for Christmas and the coming year,

Yours Sincerely

[Signature]

Paola Amreit
Chairman
Anglicare Southern Queensland Human Research Ethics Committee
Appendix 6 – Ethic approval (Organisation C)

OZCARE NURSING
PO Box 4094
ROBINA T.C. QLD 4230

Email: nursing.robina@ozcare.org.au
Phone: (07) 5569 6200
Fax: (07) 3620 4390

Winsome St John – Associate Professor
School of Nursing & Midwifery
Clinical Sciences 2, G16_2.68
Griffith University
University Drive, Southport, QLD 4222

August 22nd, 2012

To Whom It May Concern

Ozcare Community Services on the Gold Coast are delighted to be invited to be part of the Doctoral project for the improvement of ‘Infection Control Practices’ in the Community setting.

I therefore consent to participating - as outlined in the invitation letter from Dr Winsome St John.

Should you require any further information, please do not hesitate to contact me on 5569 6200

Kind regards,

Kate Dobbie
Clinical Nurse Manager
Appendix 7 – Ethic approval (Organisation D)

26 November 2012

Miss Ohood Felemban
School of Nursing & Midwifery
Griffith University
Gold Coast Campus
SOUTHPORT QLD 4222

UNITINGCARE QUEENSLAND HUMAN RESEARCH ETHICS COMMITTEE
Reference Number: Felemban 13212
Study Title: Infection prevention and control programs in community-based home visiting nursing in Southeast Queensland

Dear Ohood

Thank you for your responses to the issues raised in our Outcome letter to you dated 17 July 2012.

The Committee has granted approval for you to proceed with this stage of the study (1-3). We would like to wish you well with this important work.

You will be required to submit a new application for the next stage of the project, rather than an amendment, in order to deal with the ethical issues that will need to be considered.

Please contact Mr Brent Hodgkinson from Blue Care when you are ready to commence recruiting, ie: you need to contact him to allow for advertisement of the research AND NOT to make direct contact with care staff at any level in the first instance. His telephone number is: 07 3720 5306.

If you have any further questions, please contact: Ms Pat Patterson, UCQ HRBC Coordinator on 07 3025-2136 or (patricia.patterson@ucareqld.com.au).

Yours sincerely

Ms Colleen Geyer
Chair, UnitingCare Queensland Human Research Ethics Committee
Appendix 8 – Poster for promoting the project

Do you provide home health care to clients?
Have your say on infection prevention and control in the community

You are invited to participate in a study investigating the specific issues related to infection prevention and control in home health care.

We know that infection prevention and control is different in the home health care environment, so we are investigating:
- Infection prevention and control programs and plans
- How infection prevention and control programs and plans function in the home health care setting
- The challenges to implementing infection prevention and control programs and plans in home care.

Our findings will inform the development of a framework for infection prevention and control programs and plans for home visiting nursing.

Your views are important to us - so contact us to get more information about how you can participate. Please send us your details using the postcard below. Or you can send an email to Ohood.felemban@griffithuni.edu.au or ring 0432284009 for more information.

Research team:
Ms. Ohood Felemban, PhD Candidate, School of Nursing & Midwifery
Associate prof. Winsome St John
Associate prof. Ramon Shaban

Griffith UNIVERSITY
Population and Social Health Research Program, Griffith Health Institute.
Research Centre for Clinical and Community Practice Innovation
Appendix 9 – Participant information (Individual interview) and consent form

### PARTICIPANT INFORMATION (INDIVIDUAL INTERVIEW) AND CONSENT FORM

<table>
<thead>
<tr>
<th>Project Title</th>
<th>Infection Prevention and Control Programs in Community-Based Home Visiting Nursing in Southeast Queensland, Australia: A Case Study</th>
</tr>
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</table>
| Investigators | Assoc. Prof. Winson S. John, Principal Supervisor, School of Nursing & Midwifery  
                 Telephone: 07 55299335, Email: w.john@griffith.edu.au  
                 Assoc. Prof. Ramon Shakun, Associate Supervisor, School of Nursing & Midwifery  
                 Telephone: 07 33821271. Email: r.shakun@griffith.edu.au  
                 Ms. Ohood Falehman, PhD Candidate, School of Nursing & Midwifery  
                 Telephone: 0412284009. Email: Ohood.falehman@griffith.edu.au |

#### Why is this study being conducted?
We want to understand current infection prevention and control programs in home visiting organisations and how they operate. Healthcare-associated infections are infections that a person acquires while receiving therapy or treatment in a healthcare setting. Research has shown that healthcare-associated infections have many negative effects on patients’ health, and incur significant costs. Infection control programs are important for preventing healthcare-associated infections.

We know that when you are providing care to your patients in a home or community setting, it can be a real challenge to implement infection prevention and control programs and plans. Most programs and plans have been developed in acute settings, so we don’t really have much information about the issues you face in the community environment, including variable environments, limited access to equipment, help and resources, and clients who may be clinically vulnerable to infections. Our project will investigate the specific issues related to infection prevention and control programs in community-based home visiting nursing with the aim of developing an appropriate framework for community-based infection prevention and control programs and plans. The research is in the subject of doctoral studies for researcher Ohood Falehman.

#### Why have I been selected?
Your views are very important to this project. We are inviting you to participate because:
- You have responsibility for developing and/or managing implementation of infection prevention and control programs and plans in your agency;
- You are involved in providing staff development about infection prevention and control; or
- You are on the front line providing direct care to clients, or supervising others who provide care in the home or community context.

We would like an opportunity to talk with you about how infection prevention and control programs and plans for home visiting nursing are managed and implemented. We particularly want to understand the difficulties you face in development of your program and plans, and implementation as care is provided to clients. This knowledge will help inform better solutions for improving infection prevention and control programs, plans and strategies for community-based home visiting nursing organizations.

#### What will I be asked to do?
We will ask you to participate in an individual interview. The interview should not be more than 60 minutes. We will ask you questions about how infection control programs and plans in your agency are structured and implemented. If you have any responsibility for managing infection prevention and control in your agency, we will ask you about planning processes. If you provide client care we will ask you questions about infection prevention and control in your practice. Because we need to describe the people who have participated in this study, we will be asking you a few questions about yourself.

Any information you provide will be strictly confidential. Only the research team will have access to the raw data, and we will not divulge if you have agreed to participate or not. We are inviting participants from more than one home visiting nursing agency, and will collate data from all agencies and participants before providing feedback to agencies or publishing our results. We will de-identify information provided by participants, and will exclude information that could identify participants in the final report or any publication. The interview will
be tape-recorded and transcribed for the purpose of data analysis process. The tapes will be stored securely until transcription, after which they will be permanently destroyed. You will be invited to participate in follow-up interview if: i) there are any issues that need clarifying from your first interview and/or ii) you are unable to participate in a focus group.

What are the benefits of this research?
This research will provide information about how infection control programs and plans operate in community-based home visiting nursing. It will identify and address the challenges that community healthcare providers encounter with regard implementing infection control programs and plans in community context. This information will benefit nurses working in a community context, agencies, managers, infection control specialists, stakeholders and policy makers who seek to provide safe and high quality care is provided to clients who receives home healthcare nursing services.

Are there any risks?
There are no major unforeseen risks to you of participating in this low-risk study. However, if you manage infection control in your agency, there is a minor risk for you that you may be identified by staff in your own agency staff because you may have a specific role in your agency. There is also a small chance that some findings may reflect negatively on participants’ reputations professionally, personally, and related to employment. However, the risks are minimal and are no greater than those associated with everyday practice. We are addressing this risk by maintaining the strictest confidentiality. As much as possible, care will be taken to remove any information that could identify individual agencies and participants. Furthermore, strict confidentiality will be maintained and only the research team will have access to the raw data. More than one agency will be invited participate in this study and all results will be de-identified and aggregated before results are provided as feedback or published. These processes mean that the risk of an organization or participant being identified is very low. We suggest that these risks are far outweighed by the anticipated benefits, which will contribute to understanding of how infections are prevented and controlled within a home visiting nursing context. The results of this study will inform development of a framework for infection prevention and control programs and plans for community-based home visiting nursing.

Confidentiality:
- The information provided in this study will be treated in complete confidence. The only assumption to this is the unlikely event of the researcher being privy to acts that they are required to report to the relevant authority within the jurisdiction.
- All data will be stored according to the National Health and Medical Research Council (NHMRC) Australian Code for the Responsible Conduct of Research. Access to all data sets will be limited to the three named investigators in this study. Access to the data will be restricted by electronic passwords and known only to members of the research team. Similarly, electronic data files of recordings will be password encrypted and stored on a confidential electronic drive that one the named researchers will have access to.
- Audio data will be retained until data analysis is complete. Once data analysis is complete, all audio recordings will be destroyed. The recordings will be used for the sole purpose of data analysis and will not be utilized for any other purpose, including presentation. Data recordings will not be use in conference presentations or for any educational purposes. You have the right to “right to be forgotten” for any and all of your own data recordings; that is view any or all recordings and approve or withdraw any of all audio recordings.
- Strict confidentiality will be maintained in this study. The conduct of this research involves the collection, access and/or use of your identified personal information. The information collected is confidential and will not be disclosed to third parties without your consent, except to meet government, legal or other regulatory authority requirements. For further information consult the University’s Privacy Plan at www.gre.edu.au/aa/ve/pp or telephone (07) 373 55585. Only the research team will have access to the raw data that will be collected in this study. All data will be de-identified early in the study. The information collected about individual participants and agencies will only be reported in aggregate form. The results will be published as part of a doctoral thesis, peer-reviewed journals, and presented at conferences, and in report form to participating agencies. These publications will not include any readily identifiable information.

Participation
Participation in this study is entirely voluntary and you may withdraw at any time with no need for explanation or comment as individual data provided may be withdrawn.

Questions/further information
For further information, concern or questions about this study you may contact Associate Professor Winsome St John, Associate Professor Kamon Shaban and Ms Ohood Felemban on their telephone numbers, which were provided at the beginning of this information sheet.

Research results
The report of final results and findings of the study will be provided to participating agencies. We hope to publish the results of our study in a nursing or healthcare journal. The research will yield information about infection prevention and control programs for community-based home visiting nursing and inform development of a framework for infection prevention and control programs in the community context, for organizations to adopt. Our results may also be forwarded on to appropriate government and healthcare agencies to assist policy development if you would like information about the results of the study, please contact us and we will provide you with a synopsis of the study when it is completed. Please be aware that data collection, analysis and publication for a research project can take some time. If you let us know your contact details, we can forward information to you when it becomes available.

Ethical conduct of this research: This Project has been approved by the Griffith University Human Ethics Committee and is being conducted in accordance with the National Statement on Ethical Conduct in Human Research (NHMRC, 2007). You may contact Winsome St John on (07) 5552 8935 or w-stjohn@griffith.edu.au if you have any questions about the conduct of this study that you wish to discuss. If you have any concerns or complaints about the ethical conduct of the research project you can contact the Manager, Research Ethics, Office for Research, Bray Centre, Griffith University, Gold Coast Road, Nathan, Qld. Telephone (07) 373 55585 or research-ethics@griffith.edu.au.
Part B- CONSENT FOR PARTICIPATION IN INDIVIDUAL INTERVIEWS

Project Title: Infection Prevention and Control Programs in Community-Based Home Visiting Nursing in Southeast Queensland, Australia: A Case Study

Investigators:
- Assist. Prof Wintson St John, Principal Supervisor, School of Nursing & Midwifery
  Telephone: 07 55989355, Email: wstjhn@gjifh.edu.au
- Assist. Prof Ramon Shaban, Associate Supervisor, School of Nursing & Midwifery
  Telephone: 07 33821271, Email: r.shaban@griffith.edu.au
- Ms. Ohood Felemban, PhD Candidate, School of Nursing & Midwifery
  Telephone: 0432284009, Email: Ohood.felemban@griffithuni.edu.au

I ............................................................... consent to participate as outlined in the participant information (individual interview) sheet for the research project entitled “Infection Prevention and Control Programs in Community-Based Home Visiting Nursing in Southeast Queensland, Australia: A Case Study”. By signing below, I confirm that I have read and understood the participant information and consent form and in particular have noted that:

- I understand that my involvement in this research will include interviewing me about the structure and operation of infection control programs and plans in my agency.
- The details of procedures and any risks involved have been explained to my satisfaction;
- I have had any questions answered to my satisfaction;
- I understand the risks involved;
- I understand that there will be no direct benefit to me from my participation in this research;
- I understand that my participation in this research is voluntary;
- I understand that the interview will be audiotaped;
- I understand that only the research team will have access to this tape;
- I understand that the audiotape will be destroyed following transcription;
- While the information gained in this study will be published as explained, it will not be identified, and individual information will remain confidential;
- I understand that if I have any additional questions I can contact the research team;
- I understand that I am free to withdraw at any time, without comment or penalty;
- I understand that I can contact the Manager, Research Ethics, at Griffith University Human Research Ethics Committee on 3735 5585 (or research-ethics@griffith.edu.au) if I have any concerns about the ethical conduct of the project; and
- I agree to participate in the project.

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<td>Witness</td>
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</tbody>
</table>
Part C – Demographic Data
Please complete the following information

1. Age:
   - [ ] 0-30  [ ] 31-42  [ ] 43-54  [ ] 55-66  [ ] 67-80

2. Gender:
   - [ ] Male  [ ] Female

3. Current occupation:
   __________________________________________

4. Highest education qualification:
   __________________________________________

5. Years of experience in home visiting agencies:
   - [ ] 1-15  [ ] 16-31  [ ] 32-46  [ ] 47-90

6. Years of experience in this home visiting nursing agency:
   - [ ] 1-15  [ ] 16-31  [ ] 32-46  [ ] 47-90

7. I am interested in participating in the focus group component of this study:
   - [ ] Yes  [ ] No

8. I would like feedback about the project results:
   - [ ] Yes  [ ] No

If you would like feedback, please provide contact details (address, email and/or phone number):

Thank you for your participating.
Appendix 10 – Participant information (Focus group) and consent form

PARTICIPANT INFORMATION (FOCUS GROUP) AND CONSENT FORM

Study Title: Infection Prevention and Control Programs in Community-Based Home Visiting Nursing in Southeast Queensland, Australia: A Case Study

Investigators: Assoc. Prof Winsonne St John, Principal Supervisor, School of Nursing & Midwifery
              Telephone: 07 55285938, Email: wstjohn@griffith.edu.au
              Assoc. Prof Ramon Shaban, Associate Supervisor, School of Nursing & Midwifery
              Telephone: 07 33821271, Email: r.shaban@griffith.edu.au
              Ms. Ohood Felemam, PhD Candidate, School of Nursing & Midwifery
              Telephone: 0435238409, Email: Ohood.felemam@griffith.edu.au

Why is this study being conducted?
Healthcare-associated infections are infections that a person acquires while receiving therapy or treatment in a healthcare setting. Research has shown that health care associated infections have many negative effects on patients’ health, and incur significant costs. Infection control programs are important for preventing healthcare-associated infections.

We know that when you are providing care to your patients in a home or community setting, it can be a real challenge to implement infection prevention and control programs and plans. Most infection control programs and plans have been developed in acute settings, so we don’t really have much information about the issues you face in the community environment, including unstable environments, limited access to equipment, help and resources, and clients who may be clinically vulnerable to infections. Our project will investigate the specific issues related to infection prevention and control programs in community-based home visiting nursing with the aim of developing an appropriate framework for community-based infection prevention and control programs and plans.

We want to understand current infection prevention and control programs in home visiting organisations and how they operate. The research is the subject of doctoral studies for researcher Ohood Felemam.

Why have I been selected?
Your views are very important to this project. We are inviting you to participate because:

- You have responsibility for developing and/or managing implementation of infection prevention and control programs and plans in your agency
- You are involved in providing staff development about infection prevention and control, or
- You are on the front line providing direct care to clients, or supervising others who provide care in the home or community context.

We would like an opportunity to talk with you about how infection prevention and control programs and plans for home visiting nursing are managed and implemented. We particularly want to understand the difficulties you face in development of your programs and plans, and implementation as care is provided to clients. This knowledge will help inform better solutions for improving infection prevention and control programs, plans and strategies for community-based home visiting nursing organizations.

What you will be asked to do?
Once we have analysed information from individual interviews, we want to discuss the issues that arise in a focus group. The focus group interview should not exceed 60 minutes. We will ask series of questions to discuss issues of infection prevention and control in community context from individual interviews and to understand your perspectives and opinions on the data analysed from individual interviews, and to obtain your suggestions on how infection control programs in the community context could be improved.

The issues from all agencies participating in the study will be collated and presented for discussion. Because we need to describe the people who have participated in this study, we will be asking you a few questions about yourself. Confidentiality cannot be guaranteed because of the nature of focus group discussions - the other people participating will know you have participated and what you say. You have the right to withdraw before the focus group interview is conducted without having to explain, however, after data are collected we will not be able to remove your data. The reason for that is the results will be de-identified and it will not be possible to identify information from specific
participants. The interview will be tape-recorded and transcribed for the purpose of data analysis. The tapes will be stored securely until transcription, after which they will be permanently destroyed.

What are the benefits of this research?
This research will provide information about how infection control programs and plans operate in community-based home visiting nursing. It will identify and address the challenges, which community healthcare providers encounter with regard implementing infection control programs and plans in community context. This information will benefit nurses working in a community context, agencies, managers, infection control specialist and stakeholders and policy makers who seek to provide safe and high quality care is provided to clients who receives home healthcare nursing services.

Are there any risks?
There are no major foreseen risks to you of participating in this low-risk study. However, there is a risk that other participants who will be attending the discussion may identify you. Confidentiality is an issue in focus groups because of the nature of focus groups discussion. However, the risks are minimal and are no greater than those associated with everyday practice. We are addressing this risk by asking participants to keep focus group discussions private. As much as possible, care will be taken to remove any information that could identify individual agencies and participants. Furthermore, strict confidentiality will be maintained and only the research team will have access to the raw data. More than one agency will be invited participate in this study and all results will be de-identified and aggregated before results are provided as feedback or published. These processes mean that the risk of an organisation or participant being identified is very low. We suggest that these risks are far outweighed by the anticipated benefits, which will contribute to understanding of how infections are prevented and controlled within a home visiting nursing context. The results of this study will inform development of a framework for infection prevention and control programs and plans for community-based home visiting nursing.

Confidentiality
• The information provided in this study will be treated in complete confidence. The only exemption to this is the unlikely event of the researcher being privy to acts that they are required to report to the relevant authority within the jurisdiction.

• All data will be stored according to the National Health and Medical Research Council (NHMRC) Australian Code for the Responsible Conduct of Research. Access to all data sets will be limited to the three named investigators in this study. Access to the data will be restricted by electronic passwords and known only to members of the research team. Similarly, electronic data files of recordings will be password encrypted and stored on a confidential electronic drive that one named researchers will have access to.

• Audio data will be retained until data analysis is complete. Once data analysis is complete, all audio recordings will be destroyed. The recordings will be used for the sole purpose of data analysis and will not be utilized for any other purposes, including presentation. Data recordings will not be used in conference presentations or for instructional purposes.

• Strict confidentiality will be maintained in this study. The conduct of this research involves the collection, access and/or use of your identifiable personal information. The information collected is confidential and will not be disclosed to third parties without your consent, except to meet government, legal or other regulatory authority requirements. For further information consult the University’s Privacy Plan at www.gu.edu.au/aa/pc/ or telephone (07) 373 55585. Only the research team will have access to the raw data that will be collected in this study. All data will be de-identified early in the study. The information collected about individual participants and agencies and will only be reported in aggregate form. The results will be published as part of a doctoral thesis, peer-reviewed journals, at conferences, and in report form to participating agencies. These publications will not include any readily identifiable information.

Participation
Participation in this study is entirely voluntary and you may withdraw before the focus group interview conducted without having to explain but not after the interview being conducted. The reason for that is the results will be de-identified and it will not be possible to identify the information of as specific participant.

Questions/ further information
For further information, concern or questions about this study you may contact Associate Professor Winsome St John, Associate Professor Ramon Shaham and Ms Ohood Feilinbin on their telephone numbers, which were provided at the beginning of this information sheet.
Research results
The report of final results and findings of the study will be provided to participating organizations. We hope to publish the results of our study in a nursing or healthcare journal. The research will yield information about infection prevention and control programs for community-based home visiting nursing and inform development of a framework for infection prevention and control programs in the community context, for organizations to adopt. Our results may also be forwarded on to appropriate government and healthcare agencies to assist policy development if you would like information about the results of the study, please contact us and we will provide you with a synopsis of the study when it is completed. Please be aware that data collection, analysis and publication for a research project can take some time. If you let us know your contact details, we can forward information to you when it becomes available.

Ethical conduct of this research: This Project has been approved by the Griffith University Human Ethics Committee and is being conducted in accordance with the National Statement on Ethical Conduct in Human Research (NHMRC: 2007). You may contact Winsome St John on (07) 5552 8855 or w.stjohn@griffith.edu.au if you have any questions about the conduct of this study that you wish to discuss. If you have any concerns or complaints about the ethical conduct of the research project you can contact the Manager, Research Ethics, Office for Research, Brany Centre, Griffith University, Kessels Road, Nathan, Qld. Telephone (07) 373 55585 or research-ethics@griffith.edu.au
Part B- CONSENT FOR PARTICIPATION IN FOCUS GROUP

I ...................................................................................... consent to participate as requested in the participant information (focus group) sheet for the research project entitled “Infection Prevention and Control Programs in Community-Based Home Visiting Nursing in Southeast Queensland, Australia: A Case Study” By signing below, I confirm that I have read and understood the Participant Information and Consent Form and in particular have noted that:

- I understand that my involvement in this research will include participating in a focus group to discuss issues of infection prevention and control in community context.
- The details of procedures and any risks involved have been explained to my satisfaction.
- I have had any questions answered to my satisfaction.
- I understand the risks involved.
- I understand that there will be no direct benefit to me from my participation in this research.
- I understand that my participation in this research is voluntary.
- I understand that interview will be audi-taped.
- I understand that only the research team will have access to this tape.
- I understand that the audiotape will be destroyed following transcription.
- While the information gained in this study will be published as explained, I will not be identified, and individual information will remain confidential.
- I understand that if I have any additional questions I can contact the research team.
- I understand that I am free to withdraw before the focus group interview conducted without comment or penalty, but not after the data collection.
- I understand that I can contact the Manager, Research Ethics, at Griffith University Human Research Ethics Committee on 3735 5585 (or research-ethics@griffith.edu.au) if I have any concerns about the ethical conduct of the project; and
- I agree to participate in the project.

<table>
<thead>
<tr>
<th>Names</th>
<th>Signatures</th>
<th>Date</th>
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</table>

Participant:

Researcher:

Witness:
Part C – Demographic Data
Please complete the following information

1 Age:

☐ 18-30  ☐ 31-42  ☐ 43-54  ☐ 55-66  ☐ 67-80

2 Gender:

☐ Male  ☐ Female

3 Current occupation:


4 Highest education qualification:


5 Years of experience in home visiting agencies:

☐ 1-15  ☐ 16-31  ☐ 32-46  ☐ 47-60

6 Years of experience in this home visiting nursing agency:

☐ 1-15  ☐ 16-31  ☐ 32-46  ☐ 47-60

7 I am interested in participating in the focus group component of this study:

☐ Yes  ☐ No:

8 I would like feedback about the project results:

☐ Yes  ☐ No:

If you would like feedback, please provide contact details (address, email and/or phone number):

Thank you for your participating
# Appendix 11– Document checklist and questions guiding data collection and analysis

**Documents Review**

<table>
<thead>
<tr>
<th>Infection control DOCUMENTS</th>
<th>List of DOCUMENTS</th>
<th>Questions for analysis</th>
<th>Analysis Notes</th>
</tr>
</thead>
<tbody>
<tr>
<td>Documents that identifies the structure of the program</td>
<td>1. Infection control management plan.</td>
<td>1. Who is responsible for managing and coordinating infection control program? Does she/he have clear responsibilities and accountability?</td>
<td></td>
</tr>
<tr>
<td></td>
<td>2. Designated person to manage infection control program [job description and responsibility].</td>
<td>2. How does the agency ensure the infection control program is being implemented? Is there an infection control management plan? Is it supported and resourced by agency administration?</td>
<td></td>
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<td></td>
<td>3. Role of infection control in consultation.</td>
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<tr>
<td>Infection control policies and procedures</td>
<td>1. Hand hygiene.</td>
<td>3. How often are policies and procedures reviewed? Are they up to date?</td>
<td></td>
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<tr>
<td></td>
<td>2. Standard precautions and use of personal protective equipment.</td>
<td>4. Are infection control policies and procedures easily accessible to staff?</td>
<td></td>
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<tr>
<td></td>
<td>3. Transmission-based precautions.</td>
<td>5. How does the agency monitor the compliance with infection control policies and procedures? What information is collected? How is information used?</td>
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<tr>
<td></td>
<td>4. Provision of intravenous therapy.</td>
<td>6. What types of products that are related to infection control are provided to staff?</td>
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<tr>
<td></td>
<td>5. Infection control practices related to wound care, respiratory tract care and urinary tract care.</td>
<td>7. How often are products of infection control reviewed and assessed e.g hand washing soaps, alcohol-based products, blood spill kit, PPE, and wound dressing kit?</td>
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<td></td>
<td>6. Application of clean and sterile technique.</td>
<td>8. What is the process if instruments require sterilization?</td>
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<td>7. Food preparation and provision of central therapy.</td>
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<td>9. Handling and transport of medical waste management and laboratory specimens.</td>
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<td>10. Needle stick injury.</td>
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<td></td>
<td>11. Risk management and hazard management.</td>
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<tr>
<td>Occupational safety</td>
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<td>---------------------</td>
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<tr>
<td>1. Initial assessment and health history.</td>
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<tr>
<td>2. Confirmation of immunity and provision of vaccines.</td>
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<tr>
<td>3. Initial and annual TB test, as required.</td>
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<td>4. Identification of occupational exposure and follow up of non-blood borne pathogen exposure.</td>
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<td>5. Post exposure prophylaxis for exposure to blood borne pathogens.</td>
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<tr>
<td>6. Exclusion form patient care activities.</td>
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<tr>
<td>7. Surveillance for occupational health risks [risk and hazard management policy].</td>
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<tr>
<td>8. Follow up with staff exposed to infectious disease.</td>
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<table>
<thead>
<tr>
<th>Surveillances system</th>
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<tbody>
<tr>
<td>1. Assess patient population</td>
<td></td>
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<tr>
<td>2. Select the outcome or process for surveillance</td>
<td></td>
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<tr>
<td>3. Develop or select definitions for HAIs</td>
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<tr>
<td>4. Develop data collection methods</td>
<td></td>
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<tr>
<td>5. Calculate infection rate and analyze data</td>
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<tr>
<td>6. Apply risk identification methods</td>
<td></td>
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<tr>
<td>7. Use data and information for risk reduction and quality improvement.</td>
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<tr>
<td>8. Any clinical forms related to infection control such as infection notification forms, initial client assessment form for infections.</td>
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<table>
<thead>
<tr>
<th>Staff education about infection control</th>
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<tbody>
<tr>
<td>1. Role of infection control in home care (patient safety, patient care, and occupational health).</td>
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<tr>
<td>2. Patient care practices including all the points mentioned in infection control policies and procedures.</td>
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<tr>
<td>3. Role of surveillance in preventing infection.</td>
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<tr>
<td>4. Occupational health risks.</td>
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<tr>
<td>5. Exposure control plan.</td>
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</table>

<p>| |
|  |
| 9. What happens to staff who are exposed to hazardous infectious material? How are staff followed up? |  |
| 10. Is there any staff health program for immunizations, periodic examination for infectious diseases? |  |
| 11. How does agency deal with infectious diseases? Is there any notification system? What do they report? Who is responsible to report it? To whom do they report? |  |
| 12. What type of information is collated that is related to infections, how is it analyzed, reported, and used for quality improvement? |  |
| 13. Does the agency provide infection control education to staff? What topics are included? How often are the sessions provided? |  |
| 14. Is there an infection control orientation for new staff? What does it include? |  |
| 15. Does the agency provide patient education about infection control? Who is it provided to? Who is responsible? Do they provide materials such as brochure, posters, or booklets for clients? |  |</p>
<table>
<thead>
<tr>
<th>Consultation</th>
<th>Research and Quality improvement</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Consultation personnel</td>
<td>1. Statistical reports</td>
</tr>
<tr>
<td>2. Consultation system</td>
<td>2. Reports of Infection control committee meetings</td>
</tr>
<tr>
<td>3. Consultation reports.</td>
<td>3. Infection control program evaluation reports.</td>
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<tr>
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<th>4. Feedback reports</th>
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<tr>
<td></td>
<td>5. Evaluation reports and quality improvement plans.</td>
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<td></td>
<td>6. Infection control program assessment tool.</td>
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<tr>
<th>16. Is there a specific designated person who staff may contact if they need consultation about infection control or new products for infection control?</th>
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<tbody>
<tr>
<td>17. How is the infection control program evaluated and reported? How do they use results from evaluation to improve practice?</td>
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</table>
Appendix 12 - Individual interview: Managers and infection control coordinators

The interview should take about 60 minutes and will be place at each organisation site. It will include key informant of infection control program in each organisation. The interview includes these questions:

**Section 2 – Structure of infection control program**

1. How do you ensure safe healthcare services are provided to your clients? Do you have an infection control program in your organisation?
2. Do you have an infection control committee? If so, who are the members and what are their roles? Tell me about it.
3. What sort infection control policies and procedures are available in your organisation? Tell me about them.
4. How do you ensure that your infection control program is implemented?
5. How do you monitor infections in your organisation? What types of information are collected?
6. What do you do about notifiable diseases? What types of diseases are included?
7. How do you assess your employee health with respect to infectious diseases?
8. How do you keep your employees’ knowledge updated about infection control?
9. What equipment related to infection control is provided to staff by organisation?
10. How do you provide infection control consultation to employees?
11. Do you report any feedback to employees? What does it include?

**Section 3 – Infection control processes**

1. Do you have any management plans for infection control? Tell me about them?
2. How do you monitor compliance with infection control policies and procedures?
3. How do you ensure that employees are aware of infection control policies and procedures?
4. How do you monitor the compliance with infection control policies and procedures?
5. How are clinical wastes and sharps managed?
6. Do you collect information/report information related to infections? How is this information used?
7. How do you maintain your employee’s health with respect to infectious diseases?
8. How occupational exposure to any hazardous is infectious managed?
9. Do you provide education to employees? Tell me about it.
10. How do you assess employee’s competency with regard infection control practices?
11. Do you report feedback to employees and management? How often? What do you report?
12. How do you participate in developing Infection prevention and control programs and plans in community setting?
13. What difficulties have you found in developing and implementing infection control programs and plans in a community setting?
Appendix 13 – Individual interview: Home visiting nurses

The interview should take about 60 minute and will be place at each organisation site. The interview includes these questions:

1. How do you prevent your clients from acquiring infections?
2. What type policies and procedures that are related to infection control are available in your organisation?
3. How did you become aware of infection control policies and procedures in your organisation?
4. What happens if you require advice about a client of yours who you suspect has an infection?
5. What infection control equipment do you use? Are they provided to you by your organisation?
6. What type of education or training in infection control was provided to you by your organisation? Was it useful and sufficient? How often do you receive educational session?
7. What is your role in educating clients and personal carers?
8. Does your organisation require you to undergo any periodical medical examination? If yes, what does this examination include?
9. Have you ever had been exposed to a hazardous infectious diseases while you were performing your job? What happened?
10. What happens if one of your patients acquires an infectious disease? Who do you inform and how? Are there any procedures?
11. Do you receive any feedback about infections from your organisation? How do you receive it? What does it include?
12. Are you required to perform any competency tests for your infection control practices? If yes, what type of test? Was it paper or practical?
13. Are you required to provide periodical proof of vaccination to your organisation?
14. How do you see the role of the infection control nurse or manager in developing and implementing infection control plans?
15. What makes it difficult to implement infection control plans in a community setting?
16. Are there any issues related to infection control in community setting that you would like to share?
Appendix 14 – Follow-up interview guide with managers

I have identified (four) issues from the documents review and individual interviews. Today, we will discuss each issue to look for possible solutions and ideas on how to make these challenges much applicable and easier in community settings. Because I am keen to develop framework for infection control for community context and I want to provide practical and applicable recommendations.

- **First issue**: Management of infection control in community context
  1. It is not easy to manage infection control in home visiting nursing, tell me your thoughts on how can infection control could be better managed in community context?
     - Who should be responsible?
     - What should be the qualification of the person who are in charge of infection control in community context?
  2. Policies and procedures of infection control are not always applicable for community context. Do you have any thoughts on how could this be addressed?
  3. It is difficult to monitor compliance of staff with infection control practices in community. What sort of policies agencies should have to address this problem?
  4. Monitoring infection might not be done properly in community home visiting nursing. What sort of policies agencies should do to address this issue? Do you have any ideas how could this be done in more official and efficient way?
  5. Evaluation of infection control in community context is important to examine how effective the program is, do you know how this could be done? Can you suggest some strategies?
  6. How could communication between different communities home care organizations with regard infection control be improved?

- **Second issue**: Environmental challenges
  1. Some clients are have poor personal hygiene, how could nurses minimize the risk of poor client hygiene?
  2. How could nurses minimize the risk of the poor environmental hygiene in the home e.g. home clutter, pets, vermin, lack of storage space

- **Third issues**: Lack of equipment and facilities
  1. How could nurses overcome the challenge of lack of equipment and facilities
     - Hand washing e.g. soap, water, clean ink, clean towels
     - Materials for procedures e.g. wound management materials
     - Sharps disposal

- **Fourth issue**: Clients issues
  1. How to encourage client understanding of the important of infection control practices
  2. How can client be better educated to keep their environment free of infection?
Appendix 15 – Focus group guide

INFECTION PREVENTION AND CONTROL PROGRAM IN COMMUNITY-BASED HOME VISITING NURSING

FOCUS GROUP DISCUSSION

Research Team
- Chooi Felizah, PhD Candidate, School of Nursing & Midwifery.
- Assoc. Prof. Winsonie St John.
- Prof. Ramon Shabab.

Aims of the focus group:
- Overview of the research
- Present the issue, comment on the problems and discuss possible solutions
- Time: 45 minutes
- The following issues have been identified:
  1. Environmental challenges
  2. Lack of equipment and facilities
  3. Clients’ issues

1. Environmental Challenges
- Identified challenges related to infection control were as follows:
  - Poor client hygiene
  - Poor environmental hygiene in the home e.g. home clutter, pets, vermin, lack of storage space

Comments?
Suggested solutions?

2. Lack of equipment and facilities related to infection control
- Lack of equipment and facilities
  - Hand washing e.g. soap, water, clean sink, clean towels
  - Materials for procedures e.g. wound management materials
  - Sharps disposal
- Unexpected events

Comments?
Suggested solutions?

3. Clients issues related to infection control
- Client understanding
- Client education

Comments?
Suggested solutions?

Suggestions
- Are there any other issues you think that may influence infection control programs in the community context?

- Do you have any other suggestions for improvement of infection control programs and plans in the community-based home visiting setting?
## Appendix 16 – Research Log

**Agency Name:** Anonymised  
**Address:** Anonymised  
**Web:** Anonymised

### MEETING AGENDA

<table>
<thead>
<tr>
<th>Date, Time and Place</th>
<th>Involved people</th>
<th>Type of contact</th>
<th>Discussion</th>
<th>Agreed things to do</th>
<th>Action</th>
<th>Note</th>
</tr>
</thead>
</table>
| 17 July 2012 10:00 | Anonymised  
Anonymised  
Winsonne Olood | Face-to-face meeting | Introducing ourselves and inviting the agency to participate in our project.  
Invitation letter and information sheet were provided. | They are excited to participate. They will reply to us ASAP.  
We need to contact quality person in their agency.  
Apply for ethic research to their agency.  
I will provide feedback about my hand hygiene research to staff. | Email sent to Anonymised to ask about contact details of the quality manager of their agency.  
Power point has been prepared, to be presented after Ramadan | To contact Anonymised to arrange a date for the presentation. |
| 19 July 2012 | Anonymised | Email | - Initial application  
- NEAF form  
- Griffith ethic approval. | E-mail was RECEIVED by Anonymised. | WAITING FOR REPLY |
| 14 August 2012 | Olood  
Anonymised (signature)  
Anonymised (e-mail) | Email | Email received form Margaret Nicholas and NEAF form + Information sheet + consent form is requested. | NEAF form and Information = Consent form was sent to Anonymised. | WAITING FOR REPLY |
| 14 November 2012 | Anonymised | Letter | Approval letter with condition to meet cost of staff time required for the project.  
To send progress report on May 2013, with 6 monthly reports thereafter until the conclusion of the project. | Winsonne will talk to Anonymised regarding the cost.  
Progress report will send as scheduled. | Done |
| 13 December 2012 | Anonymised  
Anonymised | Email | An email was sent to Anonymised and cc to Anonymised to arrange an appointment for access documents and staff recruitment. | Waiting for their reply |
| 7th February 2013 10:00 am | Olood  
Anonymised | Face to face | - The study components were explained briefly to Anonymised.  
- Agency consent form was given for her to Anonymised to sign.  
- An arrangement with the infection control coordinator for documents access and | To get the consent form signed by Anonymised then sent to me by email. | A follow up email was sent to Anonymised on the 12th Feb 2013 and waiting for her reply. |
Appendix 17 – Interview and focus groups log system

<table>
<thead>
<tr>
<th>Speaker</th>
<th>Content</th>
<th>Notes</th>
</tr>
</thead>
<tbody>
<tr>
<td>P9_J_A_M_RSL_IN1</td>
<td>We utilize PPE. So we do have a part of our mandatory training, we do provide the infection control training. We do hand washing competencies and we supply them with the PPE required that are gloves, apron, masks and goggles. Also bootie covers. How do we ensure that they are utilising the equipment that we provide them, we do support day visits with our staff the requirement is every six months to do those we do them are frequently if we identified that there is a performance issue and that is where our clinician either RN or the enrolled nurse will go out and work alongside the staff members with different of series clients so we can see them performing different tasks within different clients home in different setting so we can make sure that everything is being followed. So we have a tick sheet that we need to tick off to ensure that they are being following the standards.</td>
<td></td>
</tr>
<tr>
<td>P9_J_A_M_RSL_IN1</td>
<td>Do you have an infection control program for home care services?</td>
<td></td>
</tr>
<tr>
<td>P9_J_A_M_RSL_IN1</td>
<td>How do you ensure that staff are implementing infection control practices while providing care in home care visits?</td>
<td></td>
</tr>
<tr>
<td>P9_J_A_M_RSL_IN1</td>
<td>Through feedback from clients because we also advice clients about what is the expectation of our staff during the admission process so then they are aware so it breaks down that barrier when people are wearing gloves when providing care so they do not get that feeling, they feel bad that is, what was the feedback I have been given is that client can be a little bit upset if they see us wearing gloves because they get the impression that they might have a contagious disease and because it is such a personal services at the home, the skin to skin contact sometimes can be important with the services delivery so we need to reassure the client that this is protective measure put in place to keep them safe. So you will see our staff wearing gloves and we use them for every service delivery type that we do. So they are then aware and if the staff member then does not follow that standard, the client have report through that the staff member does not wear gloves, so we have had that feedback. So that is one safeguard, staff support visit is another because we do not announce our staff support visits, we turn up. So we do not let them know because staff normally will follow the right practices if they know someone is going to be standing beside them. So it is unannounced visits.</td>
<td>Client’s education and awareness is important to implement ICP in community context because we need their cooperation and understanding.</td>
</tr>
</tbody>
</table>