



The University of  
**Nottingham**

UNITED KINGDOM • CHINA • MALAYSIA

Broad, Rebecca (2010) Infection prevention and control – quantitative study. [Dissertation (University of Nottingham only)] (Unpublished)

**Access from the University of Nottingham repository:**

[http://eprints.nottingham.ac.uk/23624/2/2.Dissertation\\_from\\_Abstract\\_to\\_References.pdf](http://eprints.nottingham.ac.uk/23624/2/2.Dissertation_from_Abstract_to_References.pdf)

**Copyright and reuse:**

The Nottingham ePrints service makes this work by students of the University of Nottingham available to university members under the following conditions.

This article is made available under the University of Nottingham End User licence and may be reused according to the conditions of the licence. For more details see:  
[http://eprints.nottingham.ac.uk/end\\_user\\_agreement.pdf](http://eprints.nottingham.ac.uk/end_user_agreement.pdf)

For more information, please contact [eprints@nottingham.ac.uk](mailto:eprints@nottingham.ac.uk)

## **Abstract**

Effective hand hygiene is one of the easiest ways to reduce healthcare associated infections (HCAIs) (WHO 2009a). This study is based on a previous study by Barrett and Randle (2008) which examined student nurses knowledge and the barriers that they faced to hand hygiene compliance. A thorough literature review revealed a lack of empirical studies that examined Health care workers hand hygiene practices within nursing homes. This study consequently examined HCWs' perceptions of their own and patients' hand hygiene and explored the barriers to effective hand hygiene within a nursing home setting. Ten qualitative interviews were conducted with HCWs who were working in a private nursing home.

One main theme was identified within from the data entitled the theory-practice gap. Within this theme, three categories were present and included: "knowledge", "barriers" and "practice improvement". All categories contributed to the theme "The theory-practice gap". It was evident that although HCWs had a level of hand hygiene knowledge, this did not translate into practice. HCWs did however have ideas of how to improve practice.

HCWs identified a number of barriers to hand hygiene compliance. Many of these barriers have been previously identified within the literature (Barrett and Randle 2008, Harris et al. 2000, Camins and Fraser 2005). The most dominant of these barriers was accessibility to facilities including lack of alcohol-gel within nursing homes. The barriers had a negative impact on HCWs' hand hygiene compliance despite their knowledge that effective hand hygiene reduces the number of HCAIs. Health care workers knowledge about hand hygiene practices could be improved to overcome certain barriers to hand hygiene compliances.

## **Chapter One**

### **Introduction Chapter**

#### **1.0. Introduction**

In 2006 the World Health Organization (WHO) launched its first Global Patient Safety Challenge called "Clean Care is Safer Care". The aim of the challenge is to reduce health care associated infections (HCAIs) worldwide. In order to reduce these HCAIs, the challenge acknowledged that hand hygiene needs to be improved and so it recommends an increase in the hand hygiene compliance of all health care workers (HCWs), patients and visitors.

Following the success of the Global Patient Safety Challenge in 2006, the WHO launched an initiative called Save Lives: Clean Your Hands in May 2009. This invited those who work in hospitals and healthcare facilities throughout the world to register to a global hand hygiene awareness programme (WHO 2009a). These initiatives recognise the challenges and potential threats of HCAIs and acknowledges that hand hygiene is an important component of reducing them worldwide. Initiatives such as this involve all healthcare facilities, including nursing homes and all health care delivered in the community as well.

In the healthcare environment, hands are the most common way that the micro-organisms, particularly bacteria, are transferred between vulnerable sites on a patient and between one person and another (Wilson 2006, Shetty et al. 2009). Good hand hygiene is therefore one of the easiest ways to reduce HCAIs (WHO 2009a, Parliamentary Office of Science and Technology (POST) 2005). When good

hand hygiene is not practiced however, HCAIs are more probable to occur. Hand washing is considered to be the single most important way to stop the spread of germs (Health Protection Scotland 2007). An audit carried out by Health Protection Scotland highlights the importance of using a systematic approach to hand washing and hand hygiene. It emphasizes that good hand hygiene practices are essential for staff and visitors, but also for patients. Despite this, many UK campaigns and studies have addressed and measured only the hand hygiene practices of HCWs.

Health care associated Infections are not just considered a threat in the UK, but are a global concern. In order to reduce the number of HCAIs globally an "International Clean Hands Week" is run each year (Clean Hands Coalition 2009). The National Audit Office (2009) in a review about the international management of HCAIs stated that further research needs to be carried out on the international threat of HCAIs in order to continually try and reduce the number of incidences.

### 1.1. Aims and Objectives

#### **Research Question:**

"To investigate health care workers' perceptions of their own and patients' hand hygiene and to explore potential barriers to effective hand hygiene within a nursing home setting".

**Aim:**

The aim of this study is to examine HCW's perceptions of their own hand hygiene and of patients' hand hygiene within a nursing home setting. The barriers that prevent nurses and care workers from practising good hand hygiene will also be discovered and discussed.

**Objectives:**

The study's objectives are to:

- ◆ Examine HCWs' knowledge of hand hygiene.
- ◆ Examine health care workers' attitudes towards hand hygiene.
- ◆ Examine the barriers to hand hygiene compliance.
- ◆ Investigate factors that affect health care workers' perceptions of their own and their patients' hand hygiene compliance.
- ◆ To make recommendations for future nursing practice and hand hygiene education and training for health care workers and patients.

This chapter has identified the importance of hand hygiene as an effective way of reducing HCAIs which may cause undue distress and harm to individuals. The research question has been identified and the following chapter will contextualise the research question within the available theoretical literature.

## **Chapter Two**

### **Literature Review**

#### **2.0. Introduction**

This chapter will discuss, analyse and interpret literature and past studies that have been conducted surrounding the topic of hand hygiene. Healthcare associated infections are continuing to affect patient morbidity and mortality. They also contribute to the rising cost of healthcare. Effective hand hygiene can lower the prevalence of HCAI, therefore reduce the cost to healthcare and reduce patient morbidity and mortality. (Siegel et al. 2007, DH 2003)

Health care workers have a responsibility to ensure that their practices result in safe patient care. Nurses in particular have both a professional responsibility and a moral obligation to protect their patients (Nursing and Midwifery Council (NMC), 2004). This includes minimizing the risk of infection through the implementation of standard precautions such as effective hand hygiene.

The National Institute for Clinical Excellence (NICE 2003) produced guidance stating that there is a lack of studies conducted both in the community and primary care settings surrounding the field of hand hygiene. For this reason, the recommendations made in some areas of hand hygiene are not made through evidence based research, however they are based on the opinions of experts. The NICE publication recognises that there is a shift from hospital care to care given in outpatients' clinics, the community and in nursing homes. According to NICE (2003), these factors create the potential for patients to be at greater risk of acquiring HCAs. This shows that it is

important for more research and studies to be completed within the area of hand hygiene, particularly within the community and nursing homes.

### 2.1. Hand Hygiene

There are many definitions for hand hygiene. One definition from the World Health Organisation (WHO 2009a) simply defines hand hygiene as a term referring to any action of hand cleansing. Hand cleansing is defined as an action of performing hand hygiene for the purpose of physically or mechanically removing dirt, organic material, and/or microorganisms (WHO 2009a). According to WHO (2009a) hand cleansing is a different practice than hand washing since hand washing is washing hands with plain or antimicrobial soap and water. These definitions may cause confusion in training and teaching health care workers about effective hand hygiene. Below are some definitions of common hand hygiene terms adapted from the WHO Guidelines on Hand Hygiene in Health Care (2005).

- ◆ Hand washing: This involves several stages: Firstly hands should be wet with luke warm water before applying soap. The hands must be rubbed together vigorously for a minimum of 15 – 20 seconds paying particular attention to the tips of the fingers, the thumbs and the areas between the fingers. Hands should be rinsed thoroughly prior to drying with paper towels.
- ◆ Routine Hand Hygiene: This is undertaken by using soap and running water for 15 – 20 seconds or by rubbing an application of alcohol hand rub into the hands until dry.
- ◆ Hand Disinfection: Prior to an Aseptic Non-Touch Technique wash hands with soap and water followed by an application of alcohol hand rub.

- ◆ Surgical Hand washing: This is undertaken by applying an antimicrobial agent to the hands and wrists for at least two minutes. A sterile disposable nail brush may be used for the first surgical hand wash of the day, however continued use is not advisable as damage to the skin may occur, which could increase the level of microbial colonization. If an antimicrobial agent is inappropriate for staff, a surgical hand wash with soap and water followed by two or more applications of alcohol hand rub may be used as an alternative.
- ◆ Alcohol Hand rub: When decontaminating using an alcohol hand rub, hands should be free of dirt and organic material. The hand rub must come into contact with all surfaces of the hand. The hands must be rubbed together vigorously, paying particular attention to the tips of the fingers, the thumbs and the areas between the fingers, until the hand rub has evaporated and the hands are dry.
- ◆ Hand Drying: The method of hand drying is important as micro-organisms transfer more readily on wet than dry hands. Paper towels must be within easy reach of a sink but beyond risk of contamination from splashing (Damani, 2003). Use as many paper towels as required to ensure that hands are fully dry before continuing activities.

Not only could effective hand hygiene save the government millions of pounds (Plowman et al 2000) but also, according to Grol and Grimshaw (2003) at least 15%-30% of HCAs can be prevented by improving hand hygiene practices among HCWs. Effective hand hygiene is therefore vital for health care services within hospitals and the community in order to provide high quality and safe health care (Bertinato et al, 2004). Hand hygiene is also essential to maintain patient safety and the safety of their family (Burke 2003). The importance of this has been stressed within the



National Patient Safety Agency who supported the WHO's First Global Patient Safety Challenge (2006).

## 2.2. What are HCAs and how do they occur?

A HCAI is an infection which is caused by a health care associated intervention, or from the intervention of people working within health care who are carrying the infections within hospitals or health care settings such as nursing homes or within the patients' own home (HPA 2009). There are a number of factors that can increase the risk of acquiring a HCAI, one of these may be a decreased function of the immune system due to aging. High standards of infection control, including effective hand hygiene, have been proven to minimise the risk of occurrence of HCAIs (HPA 2009, Camins 2005).

The term HCAIs is in itself relatively new. For many years the term 'hospital acquired infection' was used to describe infections obtained during a hospital admission. This did not include infections acquired within the community. Since then, there has been an increasing amount of care given within the community, nursing homes and in patients' own homes. Therefore, the term 'healthcare-associated infection' is now used since it recognizes not only infections acquired in acute hospital settings but also those acquired within the community (Randle, Cooper and King, In Press). Although this is a positive point it does make comparisons of HAI and HCAI rates difficult.

Infections can have a devastating impact on individuals, their families and communities with the current spread of swine flu being a good example of this.

Infection is an invasion and multiplication of micro-organisms in the body tissue causing local cellulitis (Edwards 2008). There are classic signs and symptoms of infection which are redness, heat, pain, swelling and pus. Infection that originates from the patient is usually from the skin, nasopharynx or bowel (Edwards 2008).

Bacteria are transmitted either with contact from person to person or just within the environment. For example, the resident flora forms micro-colonies on skin and is attached to skin scales, which tend to be shed into the environment at a great rate (Edwards 2008, Russell et al 2004). The bacterial flora which is normally harmless can create problems when transferred to a patient. The resident flora can be difficult to remove by hand-washing, although a five minute hand wash reduces the release of skin flora by around 50% (Ayliffe et al 2000). However, transient flora, which is picked up accidentally from the environment, is much more easily removed by hand-washing. If hands are washed for one minute with soap and water the microbial release is reduced dramatically (WHO 2009a).

Health care associated infections can also be caused by viruses. Viruses are protein-covered sacs containing genetic material. The virus enters the cell of a living organism and reproduces. Viruses cause a wide range of diseases including HCAs and cannot be easily controlled or destroyed (Rosdahl and Kowalski 2007). Health care associated infections such as the Norovirus can be caused by viruses and ineffective hand hygiene. There is currently no national mandatory scheme for the surveillance of the norovirus outbreak in hospitals although one is currently in development (British Medical Association 2009).

### 2.3. Common Health Care Associated Infections

Some of the most common HCAIs that occur from poor hand hygiene are Methicillin-resistant *Staphylococcus aureus* (MRSA), *Clostridium Difficile* also known as *C Diff* and the Norovirus. These three pathogens are also of concern to patients in the community and specifically patients in nursing homes and consequently will be described in-depth in this chapter.

Methicillin-resistant *Staphylococcus aureus* is a common bacterium that commonly colonises normal skin (Chang and Hernan 2006). It thrives in warmer parts of the body such as the nose and perineum and can cause both superficial skin infections such as impetigo and life-threatening illnesses such as pneumonia or septicaemia (Nazarko 2002). MRSA has caused outbreaks of infection in UK hospitals since the 1980s. According to Nazarko (2002) older adults are particularly at risk of contracting MRSA since their immune system does not function as efficiently as that of a healthy younger person. However, the incidence of MRSA infection within nursing homes is unknown. Many HCWs working in nursing homes are unsure of their role in preventing the spread of MRSA while enabling the older adults colonised or infected with MRSA to lead normal lives (Nazarko 2002). This may indicate the need for more education and training within nursing homes. Since 1993 the UK has seen a rise in the incidence of MRSA both within hospitals and more recently within the community setting (Moran et al 2006). From 1993 to 2006 there was a continued increase in deaths involving MRSA from 51 to 1,652 respectively (Office for National Statistics, 2007). MRSA is a major cause of HCAIs that are becoming more and more difficult to treat because of their emerging resistance to all current antibiotic cases. Where MRSA originates from is poorly understood and there is no consensus on the number of major MRSA clones (Enright et al 2002). There are many different strains

of MRSA which makes it more difficult to treat. In the past couple of decades, the prevalence of MRSA strains had steadily increased in hospitals throughout the world (Chambers 2001).

Methicillin-resistant *Staphylococcus aureus* is a strain of *Staphylococcus aureus* which is resistant to methicillin and other antibiotics. So far, 16 strains of MRSA have been discovered although there are two particular strains (15 and 16) that are thought to be more transmissible than the others (Royal College Nursing (RCN) 2005). These strains all differ in their sensitivity to antibiotics and some strains are more easily spread than others and may have to be treated with certain antibiotics (RCN 2005). The strains of MRSA include healthcare-associated MRSA (HA-MRSA) and community-associated MRSA (CA-MRSA). Healthcare-associated MRSA strains circulate between individuals who have had contact with healthcare facilities and are present in the hospital or in the community. Community-associated MRSA infections are present within the community. These infections affect patients who have typically had no previous history of MRSA (Nathwani et al 2008). Both of these strains of MRSA could potentially be present within a nursing home setting.

*Clostridium difficile* (*C. diff*) is a bacterium that is present naturally in the gut of around 3% of adults. It does not cause any problems in a person who is healthy but factors such as broad based antibiotics can cause the *C. diff* bacteria to multiply and cause symptoms of profuse diarrhoea. *Clostridium difficile* can occasionally be fatal and the risk of this increases for people who are over 65 or people who have other serious health conditions. *Clostridium difficile* spores can multiply and spread easily. They leave the infected persons' body through diarrhoea. The spores however, can contaminate the surrounding areas such as toilets, skin and clothing which makes them spread more easily. They can also be spread through air and can remain alive for a

long time outside of the body. This means anyone who comes into contact with contaminated surfaces can easily spread the infection, especially if effective hand hygiene is not practiced. The spores can then infect other people by entering the body through the mouth, ie when people don't wash their hands.

Norovirus is another common HCAIs that is easily transmitted from one person to another and its outbreak is common in nursing homes. It is part of a group of viruses that are the most common cause of gastroenteritis in the UK and it is therefore also known as the "winter vomiting disease". It is estimated that the noro-virus affects from 600,000 up to one million people in the UK alone every year and is therefore very common, especially in places such as nursing homes and hospitals where the virus can be very easily spread between person to person (Schmid et al 2005). The Norovirus is highly infectious but it does respond to good hand hygiene. During an outbreak, it is very important for those coming into contact with infected patients to wash their hands thoroughly with soap and water to reduce the risk of the virus spreading. Cleaning off surfaces is also an effective way to reduce the spread of the virus (Health Protection Agency 2009). According to the Health Protection Agency (HPA) statistics, the incidence of Norovirus in England and Wales is increasing. In 1986 the total number of Norovirus laboratory reports was only 319. However in 2008 the total number of incidences was 6828 and the number of incidences up to July 2009 already stands at 4919 (HPA 2009). These statistics show that although the spread of this virus can be avoided by using good hand hygiene practices, the incidence is still increasing. This may be another indication for the need of training and education surround the subject of hand hygiene.

Research has shown that taking action early in an outbreak can help control outbreaks and prevent further outbreaks. A study by the Health Protection Agency

has shown that outbreaks of norovirus are reduced when control measures at healthcare settings are implemented quickly. This means implementing strict hygiene measures such as washing hands with soap and water and bleaching surfaces, as well as closing wards to new admissions within 4 days of the beginning of the outbreak (HPA 2009).

Although the Norovirus infection is usually followed by a full recovery and there are usually no long term health effects, this may not be the case in older people. Due to the symptoms of the Norovirus which include vomiting and diarrhoea one serious complication which may occur with older people is that they may become dehydrated. Dehydration can be fatal among older people especially those with an impaired immune system (Brown et al 2007). Prevention of the Norovirus is very important, especially in the older person and therefore especially in every healthcare setting.

#### 2.4. The Older Person

According to the World Health Organisation (1987) an older person is a person who is aged 60 or above. However, most developed world countries have accepted the chronological age of 65 years as a definition of 'elderly' or older person (WHO 2009a).

As people age, the function of the immune system becomes diminished (Miller 2008, Ginaldi et al 2004). The older person has fewer defences against foreign organisms and is therefore more susceptible to infections. This includes all HCAs.

For the reasons listed above, MRSA predominantly affects those over 65 years old. Older people are also most at risk from infection, with the majority of cases

occurring in people over the age of 65 (Maudsley 2004). The role of the immune system is to protect us from invading micro-organisms and foreign bodies that should not present within our system. Although the effects of aging on the immune system are very complicated, it is generally well known and accepted that the consequence of the deterioration of the immune system are a greater susceptibility to infections (Clavel and Hance 2004).

According to Maunuck (2000), alterations of immunological function that occur during aging are probably associated with an increased risk for the development of infectious disease, infections, autoimmune disease, or malignancy. Also, if the immune system is not functioning at its optimum level, the virus or bacteria, such as MRSA or *C Diff* cannot be eliminated as rapidly as a perfectly functioning immune system.

The above has shown that although many HCAIs do not cause long term effects in the healthy young person, this is not the case in older people. Some HCAIs in older people may in fact be life threatening. It is therefore best to avoid as many HCAIs as possible by practicing effective hand hygiene and following infection prevention and control policies and guidelines.

## 2.5. International Policies

The most recent publication concerning hand hygiene as a global issue was released in May 2009. The document was released from the World Health Organisation and contains updated Guidelines on Hand Hygiene in Health care (WHO 2009a). These guidelines are very detailed and go into great depth in many areas of hand hygiene

including transmission of pathogens by hands, health-care workers adherence to recommendations about hand hygiene, religious and cultural aspects of hand hygiene and also the potential barriers towards good hand hygiene. Although it covers all of these areas, it does not specifically talk about the prevention of HCAs in the community and in particular in nursing homes. These guidelines are extremely useful, but it is important that all people working in healthcare settings are aware of these guidelines and how to access and implement them.

Another national policy that is available is from the NICE (2003). These guidelines are on infection control and the prevention of HCAs in primary and community care. They do include a lot of guidance on hand hygiene since hand hygiene is the single most important factor to reduce the spread of HCAI's (National Audit office 2000). It gives a lot of guidance about which kind of hand washing technique should be used when and also how to use this technique. These guidelines do talk about hand hygiene generally, not specifically in a hospital setting or in a community setting.

Despite the plethora of guidance aimed at reducing HCAs, it has been just this, guidance. However this has now changed due to the statutory Health Act (2009). This was published by the Department of Health and contains the Code of practice for the prevention and control of HCAs. The Health Act identifies nine standards which must ensure that all the relevant policies and procedures are in place to prevent and control HCAs. Although this talks about all health care workers, it once again mainly focuses on the NHS body and does not mention prevention and control of HCAs within the community or in private nursing homes specifically. New amendments in 2010/2011 will include all healthcare providers.



The World Health Organization, as part of its First Global Patient Safety Challenge, talked about earlier, recommends implementation of strategies to increase compliance with hand hygiene. In 2009, the European Centre for Disease Prevention and Control sent questionnaires to 30 European countries, regarding the availability and organisation of their national hand hygiene campaigns. All 30 countries responded. Thirteen countries had organised at least one national campaign during the period 2000-2009 and three countries were in the process of organising a national campaign. Although the remaining countries did not have a national campaign, several reported regional and local hand hygiene activities or educational resources on national websites (Eurosurveillance 2009). This shows that hand hygiene is a worldwide issue within health care.

## 2.6. National Campaigns

In 2004, the National Patient Safety Agency (NPSA), initiated the 'cleanyourhands Campaign' within the National Health Service (NHS) in England and Wales ([www.npsa.nhs.uk/cleanyourhands/](http://www.npsa.nhs.uk/cleanyourhands/)). There are plans to continue the campaign into 2010. Funding for the campaign comes from the Government with additional support from suppliers of hand hygiene products. The campaign is supported by additional organisations including the NHS Purchasing and Supply Agency (now NHS Supply Chain) and the Infection Prevention Society. The campaign targets Health care workers with posters, leaflets, education and training resources, and its dedicated website. Involving patients and visitors is also part of the campaign, with some materials featuring the message 'It's OK to Ask'. In 2009, a series of training workshops on the WHO 'Five Moments for Hand Hygiene' ([http://www.who.int/gpsc/tools/Five\\_moments/en/index.html](http://www.who.int/gpsc/tools/Five_moments/en/index.html)) have and still

currently are taking place, supported also by other resources including a DVD. A pilot project has been started, designed to empower patients to improve compliance of HCWs with hand hygiene.

In 2006-7, Ireland organised a national campaign called 'Clean Hands Save Lives'. Its media involvement included press releases, television programmes, leaflets, posters, radio and print advertising. Hand hygiene resources for acute hospitals were included as an element of national hospital hygiene standards and subsequent external audits. No national training programme was available for Health Care Workers, but posters, e-learning programmes on hand hygiene, and a DVD on standard precautions were offered. Patients were targeted by posters and television advertising, urging them to take an active role in their health by reminding Health care workers to wash their hands. Financial governmental support came from the Health Service Executive and there was national support for auditing of compliance with hand hygiene practices.

In Scotland, the hand hygiene campaign which is called 'Germs. Wash your hands of them' ([www.washyourhandsofthem.com](http://www.washyourhandsofthem.com)) was launched in 2007 by Health Protection Scotland (HPS). An audit tool and supporting protocol are used by Scotland's 14 NHS Boards, and data for hand hygiene compliance from all NHS Boards is reported quarterly. In Scotland, previous targets for compliance which were set have been met and exceeded. The NHS Boards are now taking a zero tolerance approach towards non-compliance with hand hygiene.

These national campaigns show that a lot is being done already to improve hand hygiene throughout England, Ireland, Scotland and Wales. In NHSScotland the National Hand Hygiene Campaign has been followed up and a document published in

2010 with the results. The overall compliance in NHSScotland between 23<sup>rd</sup> November- 2<sup>nd</sup> December 2009 was 94%. This is at a high level although figures show that there is still room for improvement (Health Protection Scotland 2010). Although there appears to be no results published about the hand hygiene and HCAI rates within England, from April 2010 NHS organisations will be set an objective for reducing MRSA infections using a zero tolerance approach (Humphries 2010).

In 2008 Nottingham University Hospitals NHS trust linked up with other healthcare organizations across the region in a five week "Hand in Hand, Fighting Infection Together" campaign. The aim of the campaign was to raise awareness of key messages and promote the good work the Trust is doing to reduce avoidable HCAs – particularly the crucial importance of hand washing and hygiene. During the campaign, visitors opinions on cleanliness and infection control were asked and hand hygiene audits were completed. A review by Randle et al (2006) reported on the effectiveness of the "clean-your-hands" campaign in the Nottingham trust. The campaign indicated that there was an increase of hand hygiene compliance from 32% to 62%. Usage of alcohol hand rub also increased by 184%. This review shows that campaigns do in fact improve hand hygiene compliance and it is vital that they are carried out on a local level.

Although all of these local policies are very positive about the topic of hand hygiene within hospitals, few local policies can be found that relate to hand hygiene which is carried out within the community. It is clear that more work needs to be carried out when referring to local hand hygiene policies for the community. Many of these policies could be easily adapted for use within the community. This should be a priority for the NHS since many HCAs which originate from the community may end

up within hospital settings when residents of nursing homes are admitted into hospital.

## 2.7. Community

An enormous amount of research studies have been undertaken in this area however the majority of these have been focussed in the hospital setting. Many studies and a lot of research have been completed around the subject of hand hygiene and HCAIs. It is clear that the extent of the problem of HCAIs is very large and a study by Emmerson et al (1996) estimates that 10% of hospital patients acquire an infection as a direct result of their care. The incidence of HAI in the community setting appears to be very similar (Ayliffe, 2000). This clearly shows the importance of focussing on hand hygiene not only in hospital settings but also in the community. It is estimated that HCAIs accounts for around 5000 deaths per year and costs the NHS in England and Wales approximately £1 billion per annum (Plowman et al, 1999; National Audit Office, 2000). However, very few studies have examined costs of HCAIs to the community (Rankin, Kean 2006).

A study was carried out by Aiello et al (2008) to quantify the effects of hand-hygiene interventions on the rates of some illnesses in the community. The study showed that improvements in hand hygiene resulted in reductions in respiratory illness of 21% and reductions in gastrointestinal illness of 31%. It was also found that the most beneficial intervention was hand hygiene education with the use of non antibacterial soap. This study shows that effective hygiene does in fact reduce some illnesses and infections and therefore may improve patient care and safety. It is important to understand HCWs perceptions of their own hand hygiene so that the

right education can be given to improve hand hygiene compliance and therefore improve patient safety.

There have been a few studies that have been conducted in nursing homes regarding infection control. One study was conducted in Oslo in Norway. It investigated infection control and MRSA in nursing homes. It was a large scale study with 42 out of 55 nursing homes in Oslo participating. Three separate questionnaires were used, one for nursing staff, one for ward sisters and the final one for institutional managers. The study also looked at infection control guidelines and whether suitable guidelines were in place in the nursing home. The study found that nursing homes in Oslo had a relatively low staffing rate concerning educated HCWs. This meant that HCWs were often not educated about the importance of hand hygiene and how to practice effective hand hygiene. The study found that about 97% of the nursing homes had infection control programmes. This indicates that the infection control programmes were not working in practice. It also found that close to 20% of the nursing staff worked in more than one healthcare institution, which may be a risk concerning the spread of resistant bacteria such as MRSA if effective hand hygiene is not practiced (Thorstad and Andersen 2008).

Another past study is an evaluation of a training programme on knowledge and compliance of nurse assistants' (NAs') hand hygiene in nursing homes. Forty nurses' assistants' participated in the study. This included a hand hygiene training programme that included one hour of in-service classes and 30 minutes of hands on training. After three months the knowledge and compliance regarding hand hygiene of the NAs' were collected and the infection rate of the residents was calculated. The study found that the intervention increased NAs' hand-hygiene knowledge and adherence behaviour significantly from a previously very low 9.34% to 30.36% while

caring for nursing home residents which was statistically significant. This caused the nursing home residents' infection rates to decrease. This study showed that importance of education of nurses assistants' in order to reduce the rates of nursing home residents' infections (Huang and Wu 2007).

## 2.8. Compliance

A health care worker is defined as "*any person whose normal duties concern the provision of treatment, accommodation or related services to patients and who has access to patients in the normal course of their work.*" (DH 2006, p16).

Research and literature discussed above has identified that poor hand hygiene compliance is common among HCWs (Pittet 2000a, Pittet et al 2000b, Whitby et al 2007) and that the compliance levels of HCWs ranges from a mere 14% to 48% (Al-Damouk et al 2004; Pittet et al 1999).

A number of past studies have examined the barriers which contribute to a low level of hand hygiene compliance. These barriers to hand hygiene compliance include; lack of knowledge of guidelines and protocols, wearing gloves, forgetfulness, understaffing, inaccessible facilities, skin irritation and dryness caused by hand wash and sometimes even disagreement with the set protocols (Pittet 2000, Huggonnet and Pittet 2000, Visscher 2009). Many of these barriers may be present within the private nursing home setting and will be discussed in future chapters.

Compliance of HCWs to recommended hand hygiene procedures has been shown to be as low as 40% by the World Health Organisation (WHO). There are many barriers

to good hand hygiene. These include lack of knowledge of guidelines for hand hygiene, lack of awareness of risk of cross-transmission of pathogens, lack of facilities and lack of recognition of opportunities of hand hygiene in practice (WHO 2004, 2005, 2006).

## 2.9. Conclusion

Nursing research is a systematic inquiry designed to develop knowledge about important issues in nursing such as nursing practice, education and administration. Research is important in nursing since nurses are increasingly expected to adopt evidence-based practice. Evidence based practice for a clinical decision comes principally from findings from research. This makes research very important to enable nurses to practice safely (Polit and Beck 2006).

This study is based on a previous study by Barrett and Randle (2008) which examines student nurses' knowledge of hand hygiene practices and potential barriers to hand hygiene compliance. The study interviewed ten pre-registration nursing students using semi-structured interviews. It found that hand hygiene compliance was effected by specific barriers. This study aims to examine HCWs' knowledge and potential barriers to hand hygiene compliance.

Although there is an abundance of material and research into the area of hand hygiene and nurses perceptions of their hand hygiene in hospital settings, there seems to be a lack of research in community settings, especially HCWs who work in nursing homes, and their perceptions of their own personal hand hygiene, hand hygiene of their colleagues and also of the patients who they work with. From the

research that has been carried out, it is clear that effective hand hygiene is a very important skill that every health care professional should have.

The barriers to hand hygiene compliance will also be explored and discussed. One barrier to hand hygiene compliance is availability of equipment and resources to complete effective hand hygiene. The Health Commission Survey found that only 61 percent of respondents said that their trusts had hot water, soap, alcohol rubs and paper towels available at all times. It also found that only 28 percent reported high levels of hand-cleaning equipment, and one in five NHS workers said that they never had access to such facilities (Gillies and Lambden 2006). Within the interviews which will be carried out will be questions about barriers to hand hygiene compliance and if HCWs think that hand hygiene may be improved if effective equipment was supplied.

According to Rhinehart et al (2005) staff working in a home or hospice can serve as a role model for the patient and their family to promote hand hygiene while performing patient care. This indicates that HCWs in nursing homes should also work as educators to their patients to improve their hand hygiene and consequently the rate of HCAs. In order for HCWs to act as role models for patients, it is vital that they have the knowledge and skills to carry out effective hand hygiene themselves. This study will explore the knowledge and skills that HCWs have to determine if they are suitable role models for patients.

The following chapter will provide an in-depth discussion of the research method that was chosen and used to explore the hand hygiene practices of HCWs in private nursing homes. The chapter will also discuss any issues of bias, limitations and ethical considerations.



## **Chapter 3**

### **Method and Methodology**

#### **3.0. Introduction**

A critical review of the literature presented in Chapter Two identified the extent of the problem of HCAIs is very large both in the hospital setting and also in the community setting (WHO 2004, 2005, 2006, Emerson et al 1996; Ayliffe 2000). A thorough examination of the available literature found that hand hygiene is very important in reducing the transmission of HCAIs (Siegel et al 2007). It was found that there is a lack of research and studies surrounding the topic of hand hygiene within UK based private nursing homes especially carried out within the UK.

This study examines HCWs' hand hygiene practice in private nursing homes using a qualitative research approach with an interpretive description design. This chapter will provide an in-depth exploration of the rationale for the study design and how and why the choice of research method was made. The study's sample, research instrument and pilot interviews will be discussed along with issues such as ethical considerations.

#### **3.1. Research Design**

According to Burns and Grove (2005) research in nursing is necessary to provide evidence based care and to ensure that the nursing profession are providing quality, cost-effective care and are seeking ways to improve that care. There are three

research methods that are commonly used within the field of research. These are quantitative, qualitative and mixed methods (Creswell 2003).

The aim of quantitative research is not to understand the topic from the perspective of each individual, but to gain a general, broader picture of the population of the study. An example of quantitative research method is a questionnaire. The researcher does not get involved with the research process and therefore stays neutral. This is the reason why quantitative research methods are often considered more reliable than the qualitative research methods (Polit and Beck 2004). Mixed method research is a new and still developing form of research which comprises of both quantitative and qualitative research. It was defined as "Research in which the investigator collects and analyses data, integrates the findings, and draws inferences or methods in a single study or program of inquiry" p.4. (Tashakkori and Creswell, 2007). Mixed method investigations are answered with both narrative and numerical forms (Teddlie and Tashakorri 2008).

Qualitative research is a form of social inquiry that focuses on the way that people make sense of their experiences and the world they live in. It is used to explore the behaviour, experiences and feelings of people (Holloway and Wheeler 2002). It includes examining the opinions of people. An example of qualitative research in relation to hand hygiene was conducted by Pittet (2000). This research which examined barriers to hand hygiene indicated that the behaviour of HCWs must change for these barriers to be overcome. This study is about discovering people's perceptions of their own hand hygiene. This includes opinions of their actions and their behaviour. Therefore, a qualitative research method shall be used for this study to understand how their behaviour can be changed.

Qualitative research is an umbrella term covering many different research methods including grounded theory, phenomenology and ethnography (Bluff 1997). One method of qualitative research which can be used to explore issues and questions in nursing practice is called interpretive description. Interpretive description is a research method which can be used to explore individual behaviours and experiences whilst acknowledging the complexity of human behaviour (Thorne et al 2004). It was developed by Thorne, Kirkham and MacDonald-Emes (1997) as a response to an expressed need for an alternate method for generating grounded knowledge of clinical nursing contexts. The foundation of interpretive description is the smaller scale qualitative investigation using methods such as interviews to gain an in-depth understanding of the phenomenon under examination (Thorne et al 2004). Interpretive description uses techniques of reflective, critical examination which are generated by informed questions to generate an interpretive account (Thorne et al 2004). Interpretive description has therefore been used in this study to ensure that an in-depth understanding of nurse's and health care workers perceptions of their own hand hygiene and that of patients has been gained which can then be used to inform clinical knowledge and practice.

### 3.2. The Sample

The setting for the study was private nursing homes all within a local Primary Care Trust area. The study's inclusion criteria was all health care workers working within the private nursing home setting so included registered nurses, nursing auxiliaries/care assistants, domestic workers and office staff.

In qualitative research the aim is collect in-depth information from a few participants rather than having a lot of participants. This allows the sample size to be smaller so that a large amount of in-depth information can be gained (Clarke 1998). Letters were sent out to private nursing homes across the local primary care trust area asking for their participation in the study. A total of five letters were sent initially. A follow up call was then made a week later to ensure that the nursing homes received the letter and to ask if they would like to participate. The nursing home staffs that replied and stated that they are happy to take part in the study were used. Two private nursing homes within the Nottingham area were happy to take part and so five semi-structured interviews were conducted within each nursing home. Health care workers who were happy to take part and had the time to take part were used in the study.

Purposive sampling was used when choosing the nursing home and when choosing which HCWs to interview. Purposive sampling gives the researcher the opportunity for a degree of control of who to include within the study (Barbour 2001). This way of sampling meant that I was able to include all HCWs including nurses, health care assistants and even domestic or reception workers and gain a wider spread of information for analysis. Although this kind of sampling gives the best information for data analysis, it is sometimes thought to show bias of the researcher (Polit and Beck 2003). This is since the research is able to choose which participants take part in their study. However, this method was used since it gains experiences and thoughts from different points of view since HCWs with different roles within the private nursing home setting are being interviewed.

### 3.3. Ethics

In order to access the HCWs and to ensure an ethically sound research design, ethical approval was gained from the Medical School Ethical Committee at the institute prior to any interaction with private nursing homes within the area. (See Appendix 1).

The study required ethical approval from the Medical School committee in order to ensure that it was safe to be carried out on HCWs within nursing homes. Medical School ethical approval is required since the study will be help using only staff as participants and not patients. In order to gain ethical clearance for the study there are a number of ethical considerations which must be taken into account to ensure that the rights of the participants are protected and that they come to no harm through the study (Carr 2003).

An ethical consideration that needed to be addressed in this study was ensuring that informed consent was gained from all participants. Informed consent describes an interactive process in which individuals voluntarily agree to participate in a research study after the purpose, risk and benefits have been thoroughly described and understood. There are three conditions to informed consent; the provision of information, comprehension of information and also voluntary participation (Marshall and Marshall 2007). Before the interview takes place the participants were given information sheets to read which contained all the necessary information about the study to ensure that they fully understood what the participation in the study would entail. They will also be informed that they are free to withdraw from the study at any time. The participants were shown the interview schedule beforehand so that they know, as far as possible with semi-structured interviews, exactly what the

interview entails. The question of exactly how informed the consent that participants participating in a qualitative study is, is a controversial one. This is because interviews are only semi-structured and therefore the participant is not aware of the exact questions that they will be asked prior to the interview and therefore cannot give complete informed consent (Bluff 1997). In order to ensure that ethical considerations were taken into account, the participants were made aware that they may be asked more questions than originally thought and they were all asked to read and sign a consent form prior to the interview.

It is also very important to maintain the confidentiality and anonymity of the participants of the study at all times. According to the Royal College of Nursing (2004) confidentiality is the need to safeguard the participant's dignity and privacy keeping all personal information confidential at all times. In order to do this all interviews will take place on a one to one basis. According to Khan and Manderson (1992) a relaxed atmosphere makes it a lot easier for participants to talk about the attitudes, thoughts and experiences. This helps the collection of useful, reliable, in-depth information. To ensure that a relaxed environment was created, the interviews were taken place in a quiet room in which the participant was familiar with.

#### 3.4. The Research Instrument

The chosen method of data collection was the semi-structured interview. By using the semi-structured interview I had more flexibility with the questions asked. The interviews were tailored to the individual in order to get the best results. According to Wengraf (2001) semi-structured interviews are designed to have interview questions already prepared prior to the interview but these questions are designed to

be sufficiently open that subsequent questions of the interviewer cannot be planned in advance. Semi-structured interviews were selected since they may yield a lot more information than fully structured interviews (Wengraf 2001). They also provide some structure and direction during the interview which will ensure the collection of valid data by a novice researcher.

Whilst conducting the interviews, I was able to adapt the questions to get the most useful experiences and thoughts out of the participants. I was also able to improve my interviewing technique as I became more competent throughout the interviews. This once again helped me to gain the most appropriate information out of the participants.

This research method was based on the study by Barrett and Randle (2008). It was clear from Barrett and Randle's work that this was an effective choice of research method since the information gained from the interviews proved to be significant and useful information was gained.

### 3.5. The Pilot Study

A pilot study was carried out before the semi-structured interviews of the participants. This was a small scale version of the larger study. Pilot studies provided the interviewer with an opportunity to identify any strengths or weaknesses in the study's design (Polit and Beck, 2004). The pilot study was carried out with voluntary peers to determine whether any changes needed to be made to the semi-structured interview. It also gave me, a novice researcher experience of conducting an

interview which will help to gain the maximum collection of in-depth data possible in the actual interviews.

The pilot study did identify some weaknesses with the interview structure. E.g. some questions did not lead to open answers. This gave the opportunity for the interview to be altered and improved before the data collection began. Additional questions were added to the original schedule to ensure that all the information required to collect in-depth data was in fact collected.

### 3.6. Data Collection

Ten semi-structured interviews were conducted. When participants from the nursing homes agreed to take part in the study, a convenient time for them was arranged for the interview to take place. The interviews took place in the nursing home setting for convenience of the interviewees and also to put them at ease during the interview. A quiet room was used with as little distractions as possible.

In this study, the recording of interview data was carried out using a Dictaphone. This gave me the opportunity to listen and interact paying full attention to the participant and an opportunity to transcribe and analyse the data at a later date. When the participant realised that they were being recorded they seemed nervous and put off by it. Throughout the interview, their nerves seemed to ease and they seemed to relax a bit more (Polit and Beck 2004). In order to maintain confidentiality and anonymity of the participants, all data was made anonymous and was kept in a safe and secure location.



### 3.7. Data Analysis

The purpose of data analysis is to organise, provide structure and elicit meaning in the data (Polit and Beck 2004). Data analysis is a very important part of the study since the better the execution of the analysis is, the stronger the conclusion. The purpose of the data analysis will be to identify themes and categories in the data so that an in-depth understanding of the interviews can be gained.

The interviews were listened to carefully and transcribed into written form. The transcriptions were then read over to familiarize the researcher with the data. Once the data was familiarized, it was read over again and key themes and categories were identified. These recurrent themes and categories will then be removed from the text and noted down. The transcript was re-read over and over until no new themes emerged.

### 3.8. Issues of Rigour

There are many issues of rigour within qualitative data. These include reliability, validity, trustworthiness and credibility. Addressing issues of rigour ensures that the study's integrity is maintained and that the findings are an accurate representation of the participant's experiences (Tobin and Begley 2004). The issues of rigour present in this study will now be discussed.

Joppe (2000) defines reliability in qualitative research as:

*"...The extent to which results are consistent over time and an accurate representation of the total population under study is referred to as reliability and if*

*the results of a study can be reproduced under a similar methodology, then the research instrument is considered to be reliable.” (Joppe 2000, p.1)*

Although replication of qualitative data is often seen as difficult in qualitative data because the results are the product from the thoughts and experiences are the participation at the time of data collection (Gerrish 1997), it is argued that replication of data is not the intent of qualitative research, but to gain an in-depth understanding of the participants thoughts at the time when the research is being carried out (Parahoo 1997).

Joppe (2000) provides the following explanation of what validity is in quantitative research:

*“Validity determines whether the research truly measures that which it was intended to measure or how truthful the research results are. In other words, does the research instrument allow you to hit “the bull’s eye” of your research object? Researchers generally determine validity by asking a series of questions, and will often look for the answers in the research of others.” (p. 1 Joppe 2000)*

Validity is not a concern in qualitative data since the aim is to understand the participants’ thoughts and experiences and so these must be valid (Polit and Beck 2004, Parahoo 1997). The HCWs comments in the interview are taken as an accurate representation of their understanding, thoughts and feelings of their own hand hygiene and that of their patients in their own private nursing home.

Trustworthiness is an issue of rigour present in any qualitative study. Lincoln & Gubas' concept of trustworthiness (1985) is that the inquirer, in this case the researcher, must persuade the audience that the findings of the study are worth paying attention to. In order to ensure that trustworthiness was present in this study, all issues of rigour were concentrated on throughout the study and not just at

the end. This also ensures that verification and attention to rigor is evident in the quality of the text throughout the study (Morse et al 2002)

Qualitative research can be based on the assumption of multiple, constructed realities and it is therefore important for qualitative researchers to demonstrate that their findings are credible (Mackey and Gass 2005). There are several ways the credibility of a study can be achieved. These ways suggested by Fraenkel and Wallen (2003) include continuing to collect data over a long period of time to ensure that the participants have become used to the researcher and are behaving naturally and collecting data in as many contexts and situations as possible to make sure that a full picture is provided in the research. Although the time was not available for data collection to be done over a longer period of time, many different HCWs in different situations and context were interviewed to ensure credibility of the study.

### 3.9. Conclusion

This chapter explored the rationale behind the chosen study design and how and why the choice of research method was made taking into consideration the study's sample, pilot interviews along with ethical issues and issues of rigour. Although there were some limitations to the study including lack of time and resources, the greatest variety of participants that could be accessed were and so many issues of rigour have been addressed.

The following chapter will present an in-depth presentation of the themes and categories found within the data through data analysis.

## **Chapter Four**

### **Findings**

#### 4.0. Introduction

This study aims to discover and investigate HCW's perceptions of their own hand hygiene; the hand hygiene of patients; and barriers to good hand hygiene within a nursing home setting. The themes, categories and codes which have been emerged from the data analysis will be identified and presented in this chapter. As stated in the previous chapter, the interviews produced a great quantity of transcribed data; thus I cannot present all of the interviews and words in this thesis. The examples included in this chapter are a small proportion of the transcriptions but they do demonstrate the recurring themes and categories. In order to preserve the participants' anonymity, pseudonyms were given to both the participants and their colleagues.

The findings of the study uncovered perceptions to hand hygiene. The theory practice gap theme explained all the categories and codes that emerged from the data. Three categories were uncovered through my interpretation of participants' accounts and these, alongside the codes of each category are summarized in table 1.

Table 1: Theme, categories and codes

Theme – Theory-practice gap

<u>Categories</u>	<u>Codes</u>
1. Knowledge	• How • When

	<ul style="list-style-type: none"> <li>◆ Why</li> <li>◆ Guidelines and policies</li> <li>◆ Alcohol gel verses soap and water</li> <li>◆ Education</li> </ul>
2. Barriers	<ul style="list-style-type: none"> <li>◆ Facilities</li> <li>◆ Time/Forgetfulness</li> <li>◆ Skin Condition</li> <li>◆ Glove use</li> <li>◆ Disobedience e.g. false nails</li> <li>◆ Barriers for patients and visitors</li> <li>◆ Patient Knowledge</li> </ul>
3. Practice improvement	<ul style="list-style-type: none"> <li>◆ Strategies for improving hand hygiene compliance</li> <li>◆ Strategies for improving knowledge and education of hand hygiene</li> <li>◆ Strategies for improving hand hygiene of patients.</li> </ul>

#### 4.1. Theory-practice gap

The theme that was identified within the data was the theory-practice gap. It appeared that although HCWs may have theoretical hand hygiene knowledge this may not be applied in practice since they have lack of knowledge of policies and guidelines. The findings are outlined below.

#### 4.2. Knowledge of Hand Hygiene

There was a vast range in HCWs knowledge towards hand hygiene. Knowledge of hand hygiene includes the how, when and why as well as knowledge of guidelines and policies about hand hygiene and the HCWs perceptions of the knowledge of their patients hand hygiene. Many participants were confident with their knowledge base.

*I wash my hands after patient contact, after feeding and especially after toileting a resident. I wear protective clothing like gloves and wash my hands after taking off my gloves.*

(Participant 1)

However, when talking about their practice of hand hygiene many participants were unsure when they should wash their hands. There was no mention of the WHO "My 5 moments for hand hygiene" (2009) and participants vaguely summarized when they should wash their hands:

*I wash my hands before admin (administration) of medication and I use soap and water*

(Participant 2)

Similarly,

*You wash your hands before and after every activity. That is before you go in to wash a resident and after you finish. Or before you enter the home you wash your hands and when leaving as well. Palm to palm, between your fingers, wrists with warm water and soap, lather them. (Demonstrates hand hygiene).*

(Participant 7)

There was a poor awareness of hand hygiene policies and guidelines, all of the participants were able to give a minimal amount of knowledge either involving courses that they have been on were able to talk about posters that they have seen up around the home:

*I know that we've got posters up like in regards to swine flu and that but I don't know guidelines. They also have posters up with how to wash your hands, a step by step guide on how to wash your hands. But you can tell that I've not read it.*

(Participant 9)

*Yes we have an infection control lady, we do that once a year. As trained nurses we are responsible for making sure everyone washes their hands correctly. We tell them if they are wrong and ensure that they wash their hands for 30 seconds at least, got to wash every hand, we try to get over the importance of drying. There are sinks everywhere, there are sinks in the kitchen, in the corridor, in every room with drying facilities so there is no excuse not to wash your hands.*

(Participant 8)

Many of the participants interviewed did however have knowledge on which methods of hand hygiene that was more effective in different circumstances. For example, alcohol gel or soap and water. The HCWs participating stated the soap and water is a more effective when residents have infections such as MRSA and were aware that alcohol gel would not prevent the transmission of bacteria from one resident to another:

*Carers wash their hands with soap and water after toileting. They need to because of what you can transfer to another patient.*

(Participant 2)

*We do not use the alcohol gel because they asked the staff her and they said that they would prefer to use water and soap instead of alcohol gel since it makes them feel cleaner.*

(Participant 1)

At times, the level of theoretical knowledge was limited. It was clear that some HCWs were unaware of when they should be washing their hands and with which technique:

*I don't know when to use hand gel and when to use soap and water. I wanted to ask... is that hand gel stuff any good? When should you use it? I don't really know what it does.*

(Participant 5)

Overall, all of the HCWs interviewed had some degree of knowledge about hand hygiene. Although it appeared that there was a lack of knowledge about policies and guidelines which reflected in practice. The implication of this depth will be discussed in the following chapter.

#### 4.3. Barriers to Hand Hygiene Compliance

Although HCWs had theoretical knowledge, this did not always translate into practice and this was due to a number of factors which prevent HCWs from complying with hand hygiene guidelines. These are summarized in table 2 (above) as codes and include skin irritation and lack of facilities. This study found that the main concern that HCWs had was the lack of available alcohol gel and adequate facilities:



*The doctors are allowed to use the alcohol gel when they come into the home but it's not available for all of the staff within the home.*

(Participant 1)

*The home doesn't provide hand gel and most people don't buy it because it is expensive so it would be good to provide one each for the staff on the floor.*

(Participant 7)

*We have to bring our own (alcohol gel) in to work because it's too expensive for these to buy but I think that it should be provided for everyone to use in the home including visitors when they come in.*

(Participant 4)

From the study, it seemed to be that the private nursing homes were happy to supply surplus amounts of hand washing soap and sink areas for their HCWs but were unable to provide their staff with alcohol gel. Health care workers which were interviewed often said that the soap and hand washing materials provided by the private nursing home were "too cheap" and this often prevented them from washing their hands as much as they would otherwise:

*Gloves that we have are thin and cheap. We used to have good ones at one time. The soap isn't very nice either. If it was nicer maybe people would wash their hands a bit more.*

(Participant 5)

Another barrier to hand hygiene compliance talked about by HCWs is forgetfulness and the lack of time to complete hand hygiene practices effectively. The findings of this study support this with HCWs stating that at busier times in the day they found themselves either not having enough time or forgetting to wash their hands. Some

HCWs said that this is a time when it would be useful to have alcohol gel to use instead of taking more time washing their hands:

*I think that some people forget to wash their hands or don't have the time and are too busy. I think sometimes they are just concentrating on something else, but it doesn't stop me from mentioning it.*

(Participant 8)

*Sometimes in the case of an emergency when you have to be rushing, sometimes you do forget to do it and to do the technique. If someone falls or throws up on the floor you just sometimes forget.*

(Participant 7)

*I think that time restraints can make following them (hand washing guidelines) difficult, especially for night staff.*

(Participant 8)

Skin condition has often been reported as one of the main barriers for HCWs when it comes to hand hygiene compliance. This was supported by the study's findings. Many HCWs complained of dryness and irritation of their skin and stated this as a reason why they did not wash their hands perhaps as much as they should:

*I'm always busy washing my hands. My hands are all dry now cause I was them too much. I would find it useful to have some hand cream or something.*

(Participant 4)

*There is alcohol gel but I do have a problem with some detergents myself. I have to put hand cream on before I come to work and that helps to keep my hands soft for the whole day. Maybe some people don't wash their hands because it ruins their skin.*

(Participant 8)

Overuse of gloves or using gloves instead of hand washing is a barrier that has been found to decrease the compliance of HCWs hand hygiene. This study contradicts this as it found that many HCWs are aware that wearing gloves is not an alternative to hand washing and that it is still necessary to wash hands before and after wearing gloves:

*You need to wash your hands after patient contact, feeding, toileting, any procedure, you must wear protective clothing like gloves but you need to wash your hands after taking gloves off.*

(Participant 1)

*Sometimes I think people think that gloves are ok to use instead of washing your hands but that isn't true. If you put gloves on you should be washing your hands before and after.*

(Participant 8)

*I mean we do wear gloves but we still wash our hands then anyway after we take the gloves off.*

(Participant 10)

*When a resident has MRSA we have aprons inside and outside the room as well as a box of gloves. We use new gloves and wash our hands every time we go in and every time we come out we wash our hands.*

(Participant 2)

One barrier that is rarely mentioned within the literature is the HCWs not following health and safety policies relating to hand hygiene. The study found that although

HCWs were sometimes aware that they are not following policies, they still choose to wear nail varnish or watches whilst on duty:

*We do have a lot of problems with staff having nail extensions and wearing jewellery whilst on duty.*

(Participant 1)

*I always carry gloves around in my pocket just in case of emergencies. I am wearing a watch now but it is an easy release one and I need it for pulses and things.*

(Participant 8)

Participants stated that patients did have some knowledge about hand hygiene although this was minimal. Knowledge mainly consisted of knowing that they needed to wash their hands after using the toilet. Health care workers stated that the knowledge of patients on hand hygiene was generally decreased due to the majority of them having dementia:

*Most of them (the patients) still know because even though they don't wash their bottoms they will wash their hands. Some say "can I wash my hands?" after using the toilet.*

(Participant 2)

*Alot (of patients) will say "can I wash my hands" we try to do this every time but a lot we do everything for them anyway.*

(Participant 3)

*Some patients don't know to wash their hands because of dementia. Others like that lady up there washes her hands 50 times before coming out of the toilet.*

(Participant 4)

Health Care Workers also spoke about barriers to hand hygiene compliance that their patients come across. The main topic that arose when HCWs were asked about the barriers that patients face was dementia. HCWs stated that many of their residents suffer from dementia and so don't know that they should wash their hands. Physical conditions that meant that residents were unable to wash their hands themselves were also mentioned:

*Alot of our residents suffer from dementia and so washing their hands is not something that they would readily do.*

(Participant 1)

*We have to wash the residents with dementia hands for them.*

(Participant 2)

*With people with dementia, to be honest, not such much (hand washing) with them. We just like wipe their hands and stuff but it's a lot harder to get them to wash their hands. Some people can't who have had strokes and things. I mean we try and get in there to wash but sometimes it's not possible.*

(Participant 5)

*Obviously due to some of their conditions their hygiene levels are at a low standard anyway but obviously our health care assistants help them in maintaining a good standard of hygiene.*

(Participant 6)

*The problems (with hand hygiene) are mainly with patients with dementia. It depends of their state of mind. Or those who have a medical condition and are physically unable to do it for themselves.*

(Participant 7)

*I think some people just forget, with their dementia and everything.*

(Participant 10)

#### 4.4. Practice improvement

Another theme arising from the data was practice improvement where it was evident that participants were seeking ways of improving their hand hygiene. The main point that was brought up consistently throughout the interviews was the need for the nursing homes to provide more alcohol gel in order to improve the hand hygiene compliance within the home with HCWs, doctors, visitors and patients:

*If I was in charge of improving the hand hygiene here.... I would probably make sure that there was hand sanitizing gel provided for when people are coming in and going out of the home.*

(Participant 2)

*I think alcohol gel should be provided for everyone to use in the home including visitors when they come in and leave.*

(Participant 4)

*I would provide a hand gel on each floor because there is only one hand gel at the door and so it is difficult sometimes.*

(Participant 7)

Another suggestion that was made by HCWs was to put more posters, signs and notices up around the home to encourage HCWs, visitors, residents, doctors and anyone entering the home to wash their hands. Health care workers expressed that they think this will help residents, even those with dementia to remember to wash their hands.

*Certain ones (residents) you do (wash their hands) automatically because you know that they can't. Signs and notices help to residents to wash their hands.*

(Participant 3)

*Put notices up as people enter the building, like they do in hospitals. I think that sometimes this helps us (HCWs) and visitors and patients to remember to wash their hands.*

(Participant 5)

Other HCWs had other ideas of improving hand hygiene compliance. A couple of participants mentioned the UV light box as a way of improving hand hygiene whilst others had ideas of their own which could be seen as controversial.

*I think introducing one of those boxes to just show people, cause they might think that they have washed their hands to a sufficient standard but maybe they haven't and it could be done better.*

(Participant 6)

*I would do what we used to do and mark the towels and see how often they are being used. I know it's a sneaky but it's one way to find out.*

(Participant 8)

*We would need someone to monitor what's going on a more strict basis to see how many people are actually washing their hands. Then once we know who does, who doesn't, when they do and when they don't, we can see what we can do to improve it from there onwards and find out why they are not doing what they are supposed to be doing. We would ask them why they were not washing their hands, for example if it is because of the soap that they are not washing their hands because it takes too long then we would maybe give them more alcohol gel.*

(Participant 9)

From the study, it was apparent that some HCWs lack knowledge of policies and guidelines on hand hygiene. However, many HCWs had methods on how to improve their own knowledge on hand hygiene. The introduction or continuation of training and education for all HCWs was seen as an important factor of improving hand hygiene.

*Well I've had it once (infection control training) and I think that we do it every 3 years. I find it very useful to have and think that we should keep doing it and maybe do it more often so that we don't forget.*

(Participant 7)

*We have training on infection control but I haven't as yet taken part in that. My plan is to sit in on one of them so I know what you have to do and to learn the technique of hand washing.*

(Participant 9)



#### 4.5. Conclusion

This chapter has presented the themes and categories which emerged from data analysis. The findings presented in this chapter will be discussed more comprehensively in the following discussion chapter.

## **Chapter Five**

### **Discussion**

#### **5.0. Introduction**

Using a qualitative approach, this study examines the hand hygiene practices of HCWs and the barriers to hand hygiene compliance in a private nursing home setting. This chapter will provide a critical discussion, analysis and theoretical explanation for the findings presented in the previous chapter in relation to previous research and literature.

#### **5.1. Theory-practice gap**

It emerged from the study that a theory to practice gap is present in relation to hand hygiene in nursing homes. It has been well established that a theory-practice gap exists in nursing (Rolfe et al 2001, Carr 1996, Freshwater 2002, Cook 2006). A theory-practice gap relates to practice and theory remaining separate in nursing (Parse 2001, Kim 2000). From the findings, it occurred that although HCWs did have some knowledge about hand hygiene practices, this did not always translate into practice. The theory practice gap explains why some of the barriers of compliance that have been identified within the study may have been expected.

A number of studies have been carried out to explore the theory-practice gap in nursing. A study carried out by Maben et al (2006) found that the strong nursing values that newly qualified nurses emerged with were quickly sabotaged by lack of support and poor nursing role models. This demonstrates that the nursing-practice gap still exists. The difference between what is taught and what is practiced in

nursing may have profound implications for the future of the nursing profession (Latter and Clark 2006). It is therefore important to explore and discuss where the gaps in theory and practice lie concerning hand hygiene. A theory-practice gap was also found within Barrett and Randles' study (2008) which this study is based on. The gap in Barrett and Randles' study was found between what the students learnt and what they found in practice with HCWs. This is related to the practice-theory gap found within this study since this caused the gap for the students.

## 5.2. Health Care Workers Knowledge and Education

The level of knowledge and education that HCWs had about hand hygiene was inconsistent. Pittet (2003) found that HCWs education and motivation are important to modify and improve hand hygiene behavior. The minimum education for all HCWs should include knowledge of the My 5 moments for hand hygiene (WHO 2009b) and all HCWs should be aware of the hand hygiene policy and guidelines used and how to access them (Hand Hygiene Australia 2009). Although HCWs were aware of some scenarios when they should wash their hands, they were not aware of the 5 moments of hand hygiene.

All HCWs require clear and comprehensive training and education on the importance of hand hygiene (WHO 2006, 2009a, 2009b, 2010). Many educational tools are available on the internet from WHO as a resource for private nursing homes. It is important that these tools are accessed by HCWs from nursing homes to use as an aid when educating HCWs in order to narrow the theory-practice gap. It emerged from the interviews that the private nursing homes provided infection control training

on a fairly regular basis. This however, did not improve practice since it appeared that this knowledge was not retained or not used in practice.

The NMC (2004) states that as a qualified nurse, you have the duty to deliver evidence-based care and to remain up to date with any changes to theory and practice. This implies that it is one of the roles of the nurse within the any healthcare setting including the nursing home, to ensure that they follow guidelines and policies set for hand hygiene practices. A study carried out by Lankford et al (2003) found that HCWs hand hygiene compliance is influenced significantly by the behavior of other HCWs. Qualified nurses working within private nursing homes should therefore be role models for all other HCWs. Many studies have looked into the effect of role models on hand hygiene compliance (McGuckin et al 2006, Lankford 2003, Dobinson-Harrington and Cornforth 2006). A study carried out by Schneider et al (2009) found that hand hygiene behavior of senior practitioner's plays a crucial part in influencing junior staff. From this result, Schneider et al (2009) stated that more senior healthcare practitioners should remember that they play a very important role in reinforcing effective hand hygiene and patient safety. Qualified nurses that show a lack of knowledge and education are unable to act as role models for other HCWs and are therefore unable to reinforce effective hand hygiene. This once again relates to the gap that exists between theory and practice. The person in charge, the qualified nurse in this case, should ensure that the infection control policies and procedures exist, are available and are understood by all members of staff (DoH 2006). It is therefore the responsibility of the qualified nurse to ensure that all HCWs within the home practice effective hand hygiene. The nurses interviewed seemed unaware of this.

Health care workers talked about the training and education that they had. The majority found this training useful but some stated that it would be more useful if they put the theory into practice within the infection control sessions. This shows that without knowing it, some HCWs were aware of the gap that exists between the theory taught and what is practiced. The HCWs are recommending ways to decrease the theory-practice gap by suggesting that they put more of the theory taught into practice within infection control training. According to the Department of Health (2006) the owner of the care home is responsible under health and safety legislation for maintaining an environment which is safe for residents, visitors and staff. This includes arrangements for infection control training alongside the community infection control nurse (CICN), who is usually employed by the primary care trust. Their role is to provide advice, education, training, policy development and audit functions to the community. It emerged that that all HCWs within the nursing home were unaware of the CICN and the role that they play within the nursing home.

This knowledge and education that HCWs have is the theory behind the practice. If HCWs do not have knowledge and are not education about theories and policies then it is impossible for them to be put in to practice and the theory-practice gap remains.

### 5.3. Barriers to Hand Hygiene Compliance

Health care workers identified a range of barriers to hand hygiene compliance that are consistent with findings from a number of previous studies and literature (Visscher 2009, Pittet 2000a, 2000b, 2001a 2001b). Health care workers in this study identified inaccessible facilities, in particularly, a lack of alcohol hand gel, as a barrier to hand hygiene compliance.

Pittet (2003) reviews published literature on hand hygiene practices in healthcare settings and found that current guidelines recommend the use of alcohol-based hand rub formulations as the new standard of care. Larmer et al (2008) looked at evidence-based recommendations for hand hygiene for health care workers and found that many studies provided evidence to support the use of alcohol-based hand rub as the preferred hand hygiene product. The studies also found conflicting evidence for the use of plain soap which is used in the private nursing homes where the interviews took place. A survey carried out by Keseavan et al (1998) suggested that in order to increase hand hygiene compliance and reduce HCAs, all hand hygiene facilities should be made easily accessible to the HCW; this includes alcohol gel. According to WHO (2005) products should be easily accessible in order to achieve optimal compliance with hand hygiene among HCWs. Although accessible facilities have been recommended as a way to improve hand hygiene compliance for many years, work by Cochran (2003) has shown that these barriers still exist within health care settings. Some HCWs were unsure of when it was appropriate to use alcohol gel. This shows a lack of understanding of the theory behind the use of alcohol gel and therefore safe practice with alcohol gel is not possible. This once again shows a gap within the teachings of theory and the reality of practice.

Lack of time and forgetfulness have emerged from the study as barriers to hand hygiene compliance for HCWs. Health care workers stated that sometimes they did not have the time to wash their hands if for example, somebody had fallen or had vomited. Interestingly enough, the availability of alcohol-based hand gel at the point of care proved to minimize the time constraint associated with hand hygiene (Pittet and Hugonnet 2004). By providing alcohol gel, nursing homes may be able to improve hand hygiene compliance due to lack of time. Forgetfulness is mentioned in the literature as a barrier towards hand hygiene compliance (WHO 2005, Pittet

2001a). The literature does not give much advice on this barrier. One solution or way to improve this barrier is to place more posters and signs up around the nursing home reminding HCWs to wash their hands. This was suggested as an improvement to practice by HCWs when interviewed.

Poor skin condition or skin irritation was identified as a barrier to hand hygiene compliance with HCWs. This is supported by a number of research studies and literature (Flynn et al 2005, Pederson et al. 2005). Health care workers in this study stated that the hand hygiene products that they used caused them to have dry and irritated skin and that any pre-existing skin conditions were worsened. The use of emollients is recommended to increase hand hygiene compliance (Larson 1999). Pittet (2001a) states that alcohol based preparations are less irritating to the skin than antiseptics and hand washes. This is another positive indication for the use of alcohol gel more widely with the private nursing home setting.

Glove use can act as a barrier towards hand hygiene compliance. One study found that HCWs are less likely to wash their hands after wearing gloves as much as 25% (Whitby and McLaws 2004). The findings of this study contradict this as HCWs seemed very aware that glove use is not an alternative to hand washing. This agrees with an observation study by Kim et al (2003) that found that glove use increased compliance with hand hygiene.

Health care workers not following policies or not being aware of infection control policies was found to be a barrier against effective hand hygiene. The main issues that were identified within the study were HCWs who wore false nails, had nails that were too long or nail polish when working. WHO (2005) states that HCWs should not wear artificial fingernails when having direct contact with patients and HCWs must

keep nail tips short at less than 0.5cm long in order to practice effective hand hygiene practices. If HCWs were aware of these policies and guidelines they may be able to follow them and put the theory into practice to decrease the theory-practice gap and increase effective hand hygiene practice.

It was discovered that patients also faced barriers to hand hygiene compliance. Research by Brodaty et al (2001) found that 90% of residents in nursing homes exhibited at least one behavioral or psychological symptoms of dementia. It is not surprising that the study identified that HCWs feel that the biggest barrier for patients' hand hygiene compliance is dementia. Health care associated infections can be transmitted on the hands of patients and so their hand hygiene is also important. A lot of literature and many studies have concentrated on the hand hygiene compliance and practices of HCWs, or even visitors but there isn't much literature written about the hand hygiene compliance of patients and especially those suffering from dementia. It was identified in the study that HCWs were aware that patients suffering with dementia were unable to wash their own hands and HCWs stated that they helped them achieve effective hand hygiene. It is encouraging that without any training or education on hand hygiene of patients with dementia, HCWs were able to increase the hand hygiene compliance of their patients.

Health care workers also stated that patients' who had physical disabilities such as a stroke were unable to complete effective hand hygiene. Once again it has emerged that HCWs receive no training or education on how to improve the hand hygiene of these patients. Health care workers said that it would be useful to have more alcohol gel to help them to improve the hand hygiene compliance of their patients. Alcohol-gel improves the overall hand hygiene compliance (Maconald et al 2004, Harbath et



al 2002) and so this would be useful to improve the hand hygiene practice and compliance of patients.

#### 5.4. Improvements

Although it emerged from the study that HCWs appeared to have a lack of knowledge and education surrounding the subject of hand hygiene, they were keen to suggest improvements about hand hygiene compliance. Improvement of hand hygiene adherence is a national priority and programmes are being funded and implemented for improvement (WHO 2005, 2006, 2009a, 2009b). Hand hygiene is also being promoted at the community level to increase the self protection of both HCWs and patients (WHO 2005). The Global Patient Safety Challenge which was launched in 2005 (WHO 2006) began a new era of awareness for the need of improvement in patient safety and care. This included hand hygiene. Harris et al (2000) carried out a study where HCWs were surveyed on the strategies that would improve their hand hygiene compliance. Eighty percent of the 199 HCWs that were surveyed stated that hand hygiene facilities and products such as alcohol gel needed to be made more accessible. A study carried out by Randle et al (2006) found that a multi-model hand hygiene campaign increased hand hygiene compliance from 32% to 64%. The study also found that usage of alcohol hand gel increased by 184%. This study reflects the findings of Harris et al and Randle et al since HCWs consistently brought up the need for the nursing homes to provide more alcohol gel in order to improve the hand hygiene compliance. Another suggestion for improving hand hygiene compliance that HCWs had was the use of signs and posters in the nursing home. The literature concentrates on alcohol-gel and tends to neglect the effects that posters and signs have on hand hygiene compliance.

Improving the knowledge and education of HCWs within private nursing homes would help to narrow the theory-practice gap that is present with HCWs. If HCWs were to have a greater knowledge of policies and guidelines, adherence and compliance to hand hygiene may improve.

### 5.5. Conclusion

This chapter has provided a critical examination of the findings of the study and located them within a theoretical framework, namely the theory-practice gap. The main theme that emerged was the theory-practice gap as this explains why the knowledge and education that the HCWs have are not practiced in reality. The study has found that the most prominent barrier of hand hygiene compliance for HCWs working in private nursing homes is the lack of alcohol gel. Health care workers displayed a minimal amount of knowledge about hand hygiene policies, guidance but did have knowledge about some hand hygiene practices and how to reduce the transmission of HCAs but were willing to take part in more training and education. The study also found that not much attention has been paid to the hand hygiene practices and compliance of patients, especially those with dementia or a physically condition which compromises their ability to comply is hand hygiene.

Some similarities and differences occurred in the discussion between this study and the study which it was based on (Barrett and Randle 2008). Similar categories emerged such as barriers to compliance. However, the overall theme that appeared within Barrett and Randles' study was professional Socialization. This is a major difference in the findings of the studies since professional socialism did not appear as in issue within this study since the main theme was the theory-practice gap.

The next chapter will summaries the study's findings and set out its conclusions. The study's strengths and limitations will also be discussed and recommendations for future research, practice, training and education will be made.

## **Chapter Six**

### **Conclusions**

#### **6.0. Summary**

This chapter summarizes the findings of the study and sets out its conclusions. The strengths and limitations of the study will be investigated and discussed and recommendations will be made for future research, practice, training and education. The aim of this study is to examine HCWs' perceptions of their own hand hygiene and of patients' hand hygiene within a nursing home setting, and to discover barriers that prevent HCWs from practicing good hand hygiene. One main theme and several categories were identified in the data through data analysis. The main theme which all other theme and categories fall under is the theory-practice gap. The categories included "knowledge of hand hygiene", "barriers to compliance" and "Improvements".

Hand hygiene theory was taught to HCWs within their place of work. It has emerged that there is a theory to practice gap in HCWs having poor hand hygiene practices. This is due to the lack of knowledge that HCWs have on current policies and guidelines. This must be addressed in order for barriers to hand hygiene compliance can be overcome.

Health care workers also identified a number of barriers to hand hygiene compliance that are consistent with the findings from other research study and literatures (Star and Clayton-kent, 2004, Pittet 2001a, Ward 2000). Barriers that patients may face were also discussed and the main barrier that arose was patients suffering with

dementia and those with physically disabilities. It was found that there was not much literature surrounding this topic.

When discussing barriers to hand hygiene compliance HCWs suggested a number of possible improvements. These included increased amounts of training and education, putting more posters and signs encouraging people to wash their hands, introducing hand hygiene products that do not irritate the skin and making hand hygiene facilities, in particular alcohol gel, more accessible.

#### 6.1. Strengths and Limitations of the study

Although hand hygiene compliance and the barriers to this within the hospital setting has shown to be a well researched area, there appears to be an evident lack of research and studies of hand hygiene compliance within a community setting such as nursing home. A qualitative approach that was used enabled a large amount of in-depth data to be collected which ensured that an in-depth understanding of HCWs perceptions of their own hand hygiene and that of their patients. Purposive sampling was used in this study and was a strength of this study since it gave the researcher a degree of control of who to include within the study to ensure that a wider spread of information was gained for analysis (BarBour 2010).

All issues of rigour were concentrated on throughout the study and not just in the latter stages of the study. This ensures that verification and attention to rigor is evident in the quality of the text throughout the study and ensures that trustworthiness is present (Morse et al. 2002). This ensures that the findings of the study are an accurate representation of the participant's experiences (Tobin and Begley 2004).

## 6.2. Conclusions

This study is one of few studies that examine the hand hygiene practices of HCWs who work in a private nursing home. The findings of this study can be used to increase knowledge of the hand hygiene practices of HCWs in nursing homes and barriers of hand hygiene compliance. This can lead to improvements of the practices of hand hygiene and hand hygiene compliance which may help to reduce the transmission of HCAIs.

Health care workers are aware of the effects of inadequate hand hygiene practices and how these may lead to an increase of HCAIs. What has become apparent however is the lack of knowledge of policies and guidelines relating to hand hygiene practices that HCWs have. These must be addressed to narrow the theory to practice gap that is present.

The study identified a number of barriers to hand hygiene compliance HCWs' hand hygiene compliance some which appeared more significant than others within the private nursing home setting. These included lack of time, skin condition, lack of knowledge or education and lack of accessible facilities.

In order to improve hand hygiene compliance of HCWs all the influencing factors must be addressed together and not in isolation (Kampf 2004). This indicates the use of a multimodal improvement system. For example, knowledge and education of HCWs must be improved before facilities can be used effectively.

### 6.3. Recommendations for future research

Many previous studies have been carried out surrounding the topic of HCWs and hand hygiene and the majority of studies have shown HCWs to have poor hand hygiene compliance (Pittet 2001b, Harbath et al 2002, Huang 2007). Barriers to compliance have been identified within this study. However, further longitudinal research is needed to identify the most effective way of improving the hand hygiene compliance levels of both HCWs and patients over a sustained period of time.

### 6.4. Recommendations for future practice

From the findings and conclusions made from this study, a number of recommendations for future practice of HCWs and hand hygiene practices can be made:

- ◆ Hand hygiene training with private nursing homes needs to continue but an additional emphasis should be made on current policies and guidelines surrounding hand hygiene and HCAs.
- ◆ Training should also concentrate on raising the awareness of the theory to practice gap and provide HCWs with strategies to overcome this. This may help HCWs see the importance of guidelines and policies.
- ◆ Nursing homes should ensure that auditing of HCWs' hand hygiene practices takes place to allow barriers to compliance to be identified and addressed.

- ♦ Strategies focussing on reducing the theory-practice gap within nursing homes need to be introduced by using a multimodal approach.
- ♦ Encouraging HCWs to become effective role models of hand hygiene practices.

This reinforces what is being conducted as part of a programme “Just clean your hands” (Ministry of Health and long-term care 2009). It is providing hospitals with an audit tool which captures data on hand hygiene practices in hope of improving hand hygiene compliance.

#### 6.5. The future of hand hygiene

The aim of many current campaigns and policy document is to improve hand hygiene compliance (DH 2003, 2004, 2005, WHO 2006, 2009a, 2009b 2010). It is vital that hand hygiene is improved in order to reduce the numbers of HCAIs (Visscher 2009). It is hoped that these campaigns along with policy documents such as Save Hands: clean your hands (WHO 2009b) and continuous education recommended in the Winning Ways document (DH 2003) should help to consistently improve hand hygiene over the forthcoming years ahead.

#### 6.6. Reflection

Gibbs model of reflection (1988) will now be used to reflect on the learning process of this study. The model of reflection is being used since it is suitable for a clear description, analysis and evaluation of the experience.



Through writing this dissertation I have designed and conducted my own study and then discussed the results that were found. At first the task seemed daunting but with effective organizational and time management skills I thought that it would be a challenging task but one that I was looking forward to partaking in. In writing my dissertation and conducting the study I feel that I have both gained and improved on many skills:

- ♦ **Organisation and Time management:** One challenge of the dissertation was timing. Since we had deadlines, it was essential to complete the work in time. With such a large project I found that organisational skills were essential to meet the deadlines.
  
- ♦ **Interviewing skills:** My study consisted of conducting semi-structured interviews with HCWs in nursing homes. This was an opportunity for me to improve my interviewing technique and also my communication skills with HCWs which will be useful for the future.
  
- ♦ **Hand hygiene:** The topic of my dissertation was hand hygiene and barriers to hand hygiene compliance. From reading the literature, analysing and evaluating studies and from the interviews themselves I have learnt a lot about hand hygiene and how to practice hand hygiene effectively. I have learnt what barriers to hand hygiene compliance are present and this should help me to avoid them in practice and practice effective hand hygiene. Finally, I have learnt the importance of hand hygiene to patient safety and now recognise the need for high standards of care.

If I had the opportunity to conduct a similar study again I feel that I would be more confident when conducting interviews and collecting data. I would also be able to use the skills gained during this time to review the literature, analyse and evaluate it as well as evaluating and discussing the findings of the study. I would also like to have more time to conduct a study so that I could increase the sample size or variation to improve the results found.

## References

- Aiello A E, Coulborn R M, Perez V, Larson E L, (2008) Framing Health Matters: Effect of Hand Hygiene on Infectious Disease Risk in the Community Setting: A Meta-Analysis. **American Journal of Public Health**, 98(8)
- Al-Damouk M, Pudney E and Bleetman A, (2004), Hand Hygiene and Aseptic Technique in the Emergency Department. **Journal of Hospital Infection**, 56(2):137-41
- Ayliffe G J, Fraise A P, Gaddes A M, Mitchell K, (2000), **Control of Hospital Infection: A Practical Handbook**, 4<sup>th</sup> Edition. London: Arnold
- Barbour R, (2001), Checklist for improving rigour in qualitative research: a case of the tail wagging the dog? **British Medical Journal**, 322:1114-1117
- Barrett R. and Randle J. (2008), Student Nurses' knowledge and attitudes towards hand hygiene, **Journal of Clinical Nursing**, 1851-1857.
- Bertinato L, Ganter B, Allegranzi B, Cookson B. (2004). **International consultation on healthcare associated infections, Quarterly Communicable Disease Report, CD News**, WHO:34.
- Bluff R, (1997) Evaluating Qualitative Research. **British Journal of Midwifery**, 5(4): 232-35
- Boyce JM, Pittet D, (2002) Guideline for Hand Hygiene in Health-Care Settings: Recommendations of the Healthcare Infection Control Practices Advisory Committee and the HICPAC/SHEA/APIC/IDSA Hand Hygiene Task Force. **Morbid Mortal Wkly Rep**; 51:1-45.
- British Medical Association (BMA) (2009), **Tackling healthcare associated infections through effective policy action**, London: BMA
- Brodaty H, Draper B, Saab D, Low L, Richards V, Paton H, Lie D, (2001) Psychosis, depression and behavioral disturbances in Sydney nursing home residents: prevalence and predictors, **International Journal of Geriatric Psychiatry** 16(5):504-512
- Brown J E, Isaacs J S, Krinke U B, (2007) **Nutrition Through the Life Cycle**, Third Edition, London: Cengage Learning.
- Burke J (2003) Infection control-a problem for patient safety, *The New England Journal of Medicine* 7(348):651-656
- Burns N and Grove S, (2005) **The Practice of Nursing Research: Conduct, Critique, and Utilization**, Fifth Edition, Elsevier Saunders: St Louis
- Camins B C, Fraser V J, (2005) Reducing the Risk of Healthcare Associated Infections by Complying with CDC Hand Hygiene Guidelines, **Journal on Quality and Patient**

**Safety**, [online] Available at: <http://www.gateway.uk.ovid.com/gw1/ovidweb.cig>. Accessed on 10/01/10

Carr D. (2003) **Making Sense of Education: An Introduction to the Philosophy and Theory of Education and Teaching**. London: Routledge

Carr E.C.J., (1996) Reflecting on clinical practice: hectoring talk or reality? **Journal of clinical Nursing**, (5):289-95

Chambers H, (2001) The Changing Epidemiology of Staphylococcus aureus? **Emerging Infectious Diseases Journal**, 7(2)

Chang A, Hernan R, (2006), **MRSA and Staphylococcal Infections**, Lulu, London.

Clarke, A. M. (1998) The benefits of using Qualitative Research, **Professional Nurse**, 13(12): 845-7

Clean Hands Coalition, (2009) **International Clean Hands Week**, [online] Available at: <http://www.cleanhandscoalition.org/nchw.htm>, Accessed on: 10/02/10

Cochran J, (2003) Infection Control Audit of Hand Hygiene Facilities, **Nursing Standard** 17(18): 33-8

Cook S H, (2006), Mind the theory/practice gap in nursing, **Journal of Advanced Nursing** 16(12):1462-1469

Creswell J (2003) **Research Design: Qualitative, Quantitative and Mixed Methods approaches**, Second Edition, Sage, London.

Damani N.N (2003). **Manual of Infection Control Procedures**. London: Greenwich Medical Media Ltd

Department of Health (2003), **Winning Ways: Working together to reduce Healthcare Associated Infection in England**, London: DH

Department of Health (2004), **A Matron's Charter: An Action Plan for Cleaner Hospitals** [online] Available at: <http://www.doh.gov.uk/PublicationsAndStatistics/> Accessed 22/12/09

Department of Health (2005), **Saving Lives: A Delivery Programme to Reduce Healthcare Associated Infection including MRSA**, London: DH

Department of Health (2006) **Infection Control Guidance for Care Homes**, Department of Health: London

Dobinson-Harrington A, Cornforth P, Should nurses be healthy role models?, **Nursing Times**, London: Macmillan Publishing Ltd

Edwards M., (2008) **The Informed Practice Nurse**, 2<sup>ND</sup> Edition, John Wiley and Sons, London.

- Emmerson AM, Enstone JE, Griffin M, Kelsey MC, Smyth ET (1996) The Second National Prevalence Survey of infection in Hospitals – overview of the results, **Journal of Hospital Infection**. 32(3): 175-90
- Enright M, Robinson D, Randle G, Feil E, Grundmann H, Spratt B (2002) The evolutionary history of methicillin-resistant staphylococcus aureus (MRSA), **Proceedings of the National Academy of Sciences of the United States of America**, 99(11): 7687-7692
- Eurosurveillance (2009), **Euro round ups: National Hand Hygiene Campaigns in Europe 2000-2009**, 14;17
- Flynn J, Foxon E, Lutz J and Pyrek J, (2005) Skin Condition and Hand Hygiene Practices of Healthcare Workers in Australia and New Zealand, **Australian Infection Control**, 10(2): 59-66
- Fraenkel J. R, Wallen N. E. (2003). **How to design and evaluate research in education**, Fifth edition, Boston: McGraw Hill.
- Clavel F, Hance A J, (2004) HIV Drug Resistance, **The New England Journal of Medicine**, 350:1023-1035
- Gail C, Willis-Field K, Simpson T, Bond E F, (2004) Clinical Nurse Specialists and Nurse Practitioners: Complementary Roles for Infectious Diseases and Infection Control, **American Journal of Infection Control**, 32(4):239-42
- Gerrish K, (97) Being “Marginal Native”, Dilemma of the Participant Observer, **Nurse Practitioner**, 5(1): 25-33
- Gibbs, G. (1988). **Learning by Doing: a guide to teaching and learning methods**. Further Education Unit, Oxford: Oxford Polytechnic
- Gillies A, Lambden P, (2006) **Medicines Management for Residential and Nursing Homes: A Toolkit for Best Practice and Accredited Learning**. London: Radcliffe Publishing
- Ginaldi L, De Martinis M, Monti D, Franceschi C, (2004), The Immune system in the elderly: Activation-induced and damage-induced apoptosis, **Immunological Research**, 30(1)
- Grol R, and Grimshaw J. (2003). From best evidence to best practice: effective implementation of change in patients’ care. **Lancet**. 362; pp 1225-1230.
- Hand Hygiene Australia (2009) **Generic Hand Hygiene Guidelines**, [online] Available at: [www.hha.org.au](http://www.hha.org.au) Accessed on 04/02/10
- Harbath S, Pittet D, Grady L, Zawacki A, Potter-Bynoe G, Samore M, Golmann D, (2002) International study to evaluate the impact of an alcohol-based hand gel in improving hand hygiene compliance, **The Paediatric Infectious Disease Journal**, 21(6): 489-495

Harris A D, Samore M H, Nafziger R, DiRosario K, Roghmann M C, Carmel Y (2000) A Survey on Hand Washing Practices and Opinions of Healthcare Workers, **Journal of Hospital Infection** , 45(4): 318-21

Health Act, (2009), **Health Act 2009**, Office of Public Sector Information, [online] Available at: [http://www.opsi.gov.uk/acts/acts2009/ukpga\\_20090021\\_en\\_1](http://www.opsi.gov.uk/acts/acts2009/ukpga_20090021_en_1), Accessed on 10/01/10

Health Protection Agency (HPA), (2009), **Healthcare-Associated Infections in England: 2008-2009 Report**, London: HPA

Health Protection Scotland, (2007), **National Hand Hygiene NHS Campaign. Compliance with Hand Hygiene – Audit Report**, [online] Available at: [www.documents.hps.scot](http://www.documents.hps.scot.nhs.uk) Accessed on: 02/02/10

Health Protection Scotland, (2010), **National Hand Hygiene NHS Campaign: Compliance with Hand Hygiene-Audit Report Your Questions Answered**, [online] Available at: <http://www.documents.hps.scot.nhs.uk/hai/infection-control/national-hand-hygiene-campaign/your-questions-answered-2010-01-27.pdf>, Accessed on: 20/02/10

Hewison A, Wildman S, (1996), The Theory-practice gap in nursing: a new dimension, **Journal of Advanced Nursing**, 24(4):754-61

Holloway I., Wheeler S, (2002), **Qualitative Research in Nursing**, Second Edition, London: Blackwell Publishing

Huang T T, Wu S C, (2007), Evaluation of a training programme on knowledge and compliance of nurse assistants' hand hygiene in nursing homes. **Journal of Hospital Infection** 68: 164-170 Elsevier Ltd.

Hugonnet S and Pittet D, (2000) Hand Hygiene: Belief or Science? **Clinical Microbiology and Infection**, 6(7): 348-54

Humphries J, (2010), **Hand hygiene in UK hospitals, Next Generation Healthcare**, [online] Available at: <http://www.nghealthcareurope.com/article/hand-hygiene-in-uk-hospitals>, Accessed on 20/02/10

Joppe, M. (2000). **The Research Process**. [online] Available at: <http://www.ryerson.ca/~mjoppe/rp.htm>, Accessed on 15/01/10

Kampf G, (2004), The Six Golden Rules to Improve Compliance in Hand Hygiene, **Journal of Hospital Infection**, 56(supplement 2):373-5

Kesavan S, Barodawala S, Mulley G P, (1998) Now wash your hands? A survey of hospital hand washing facilities, **Journal of Hospital Infection**: 404(4):291-3

Khan M and Manderson L, (1992) Focus groups in tropical diseases research, **Health Policy and Planning** 7(1): 56-66

Kim H S, (2000), ***The nature of theoretical thinking in nursing***, Second Edition, London: Springer Publishing Company

Kim, P W et al, (2003), Rates of hand disinfection associated with glove use, patient isolation, and changes between exposure to various body sites. **American Journal of Infection Control**; 31: 2, 97-103

Larmer P J, Tillsom T M, Scown F M, Grant P M, Exton J (2008) Evidence-based recommendations for hand hygiene for health care workers in New Zealand, **The New Zealand Medical Journal** (121)

Larson E, (1985) Hand washing and skin: physiologic and bacteriologic aspects. **Infect Control**; 6:14-23

Larson E, (1999) Skin hygiene and infection prevention: more of the same or different approaches? **Clinical Infection Disease** ;29:1287-94

Lankford M G, Zembower T R, Trick W E, Hacek D M, Noskin G A, Peterson L R, (2003) Influence of Role Models and Hospital Design on Hand Hygiene of Health care Workers, **Emerging Infectious Disease**, 9(2)

Latter M J, Clark M J, (2006), The theory-practice gap: impact of professional-bureaucratic work conflict on newly-qualified nurses, **Journal of Advanced Nursing** 55(4): 465-477

Lincoln Y and Guba E, (1985) **Naturalistic Inquiry**, SAGE: London

Maben J, Latter S, Macleod Clark J, (2006), The Theory-practice gap: impact of professional-bureaucratic work conflict on newly-qualified nurses, **Journal of Advanced Nursing**, 55(4): 465-477

MacDonald A, Dinah F, MacKenzie D, Wilson A, (2004) Performance feedback of hand hygiene, using alcohol gel as the skin decontaminant, reduces the number of inpatients newly affected by MRSA and antibiotic costs, **Journal of Hospital Infection**, (56):56-63

Mackey A, Gass S, (2005) **Second language research: Methodology and design**, Routledge: London

Marshall P L., Marshall P A. (2007) **Ethical Challenges in Study Design and Informed Consent for Health Research in Resource-poor Settings**. London: World Health Organization

Maudsley, (2004), **The community prevalence of methicillin-resistant Staphylococcus aureus (MRSA) in older people living in their own homes: implications for treatment, screening and surveillance in the UK**. [online] Available at: <http://www.ncbi.nlm.nih.gov/pubmed/15236857> Accessed on 15/10/09

Manuck S., (2000), **Behavior, health, and aging: Perspectives in behavioral medicine** Routledge, London

McGuckin M, Shubin A, McBride P, Lane S, Strauss K, Butler D, Pitman A, (2006) The effect of random voice hand hygiene messages delivered by medical, nursing, and infection control staff on hand hygiene compliance in intensive care, **American Journal of Infection Control** 34(10) 673-675

Michael S L. (1997) **Data Analysis: An Introduction**, Third Edition, London: SAGE

Miller C. A., (2008) **Nursing for wellness in older adults**, Fifth edition, London: Lippincott Williams and Wilkins

Ministry of Health and Long-term Care (2009) **Just clean your hands**, [online] Available at: <http://www.health.gov.on.ca/en/ms/handhygiene/background.aspx>, Accessed on: 12/02/10

Morse J, Barrett M, Mayan M, Olson K, Spiers J, (2002) Verification Strategies for Establishing Reliability and Validity in Qualitative Research, **International Journal of Qualitative Methods** 1 (2)

Moran G J, Krishnadasan A, Gorwitz R J, Fosheim G E, McDougal L K, Carey R B, Talan D A, (2006) Methicillin-Resistant *S. aureus* Infections among Patients in the Emergency Department, **The New England Journal of Medicine**, 7(355): 666-674

Nathwani D, Morgan M, Masterton R G, Dryden M, Cookson B D, French G, Lewis D, (2008), Guidelines for UK practice for the diagnosis and management of methicillin-resistant *Staphylococcus aureus* (MRSA) infections presenting in the community, **Journal of Antimicrobial Chemotherapy** 61, 976-994

National Audit Office (2003) **Report by the Comptroller and Auditor General: The Management and Control of Hospital Acquired Infections in Acute NHS Trusts in England**. National Audit Office, London: The Stationary Office

National Audit Office (2000) **The Management and Control of Hospital Acquired Infection in Acute NHS Trusts in England**. London: The Stationary Office.

National Audit Office (2009) **The Management, Prevention and Control of Healthcare Associated Infections in Acute NHS Trusts in England- International Comparison Review**, London

National Institute of Clinical Excellence (2003) **Infection Control: Prevention of healthcare-associated Infections in primary and community care**. [online] Available at: <http://guidance.nice.org.uk/CG2/NiceGuidance/pdf/English> Accessed on: 28/09/09

National Institute of Clinical Excellence (2003) **Infection Control: Prevention of healthcare-associated Infections in primary and community care**. [online] Available at: <http://guidance.nice.org.uk/CG2/NiceGuidance/pdf/English> Accessed on: 28/09/09

Nazarko L., (2002), **Nursing in Care Homes**, Second Edition, London: Wiley-Blackwell

Nursing and Midwifery Council (2004), **Code of Professional Conduct, Standards for Conduct, Performance and Ethics**, London: NMC



Office for National Statistics, 2007 **Deaths involving MRSA** [online] Available at: <http://www.statistics.gov.uk/StatBase/Product.asp?vlnk=13571> Accessed on 30/10/09

Parahoo K, (1997) **Nursing Research: Principles, Process and Issues**, London: Macmillan Press

Parliamentary Office of Science and Technology (POST), (2005), **Postnote: Infection control in healthcare settings**, 247 London: POST

Parse R.R, (2001) Language and the Sow-Reap Rhythm, **Nursing Science Quarterly**, 14(4):273

Pedersen L K, Held E, Johansen J D, Agner T, (2005) Short-term Effects of Alcohol-based Disinfectant and Detergent on Skin Irritation, **Contact Dermatitis**, 52(2): 82-8

Pittet D, Mourouga P, and Perneger T.V., (1999), Compliance with Hand Washing in a Teaching Hospital, **Annals of Internal Medicine**, 130(2): 126-30

Pittet D (2000a) Improving Compliance with Hand Hygiene in Hospitals, **The Society for Healthcare Epidemiology of America** 21: 381-386

Pittet D, Hugonnet S, Harbarth S, Mourouga P, Sauvan V, Touveneau S, and Pereg T.V., (2000b), Effectiveness of a Hospital-Wide Programme to Improve Compliance with Hand Hygiene, **The Lancet**, 356(9238): 1307-12

Pittet D (2001a) Compliance with hand disinfection and its impact on hospital-acquired infections, **Journal of Hospital Infection**, 48(0) 40-46 Elsevier

Pittet D (2001b) Improving Adherence to Hand Hygiene Practice: A Multidisciplinary Approach, **Emerging Infectious Disease**

Pittet D (2003) Hand hygiene: improve standards and practice for hospital care, **Current Opinion in Infectious Disease**: 16(4): 327-335

Pittet D, Simon A, Hugonnet S, (2004) Hand hygiene among physicians: Performance, beliefs, and perceptions. **Ann Intern Med**;148:1-8.

Plowman, R., Grave, N., Griffin, M., Roberts, J.A., Cookson, B. and Taylor, L. (1999) **The Socio-economic Burden Of Hospital Acquired Infection. Executive Summary** [online]. Available at: <http://www.do.gov.uk/policyAndGuidance/HealthAndSocialcareTopics/HospitalAcquiredInfection/> Accessed on: 10/02/09

Polit, D.F. and Beck, C.T. (2004) **Nursing Research. Principles and Methods**. Seventh Edition, United States of America: Lippincott Williams and Wilkins

Polit D F., Beck C T, (2006), **Essentials of Nursing Research: Methods, Appraisal, and Utilization**. Sixth Edition, United States of America: Lippincott Williams & Wilkins

- Quattrin R, Pecile A, Conzuti L, Majori S, Brusaferrò S, the Gizio Group, (2004) Infection Control Nurse: a National Survey, **Journal of Nursing Management**
- Randle J, (2007), Continuing professional development: hand hygiene, **The Journal of Hospital Infection** 65, 172.
- Randle J, Clarke M, Storr J, (2006), Hand hygiene compliance in healthcare workers, **The Journal of Hospital Infection**, 64(3): 205-209.
- Randle J., Cooper T., King D in press. **Infection Prevention & control: A practical Handbook for health care workers**
- Rankin A. and Kean L, (2006), Application of Standard precautions in the community setting. **British Journal of Community Nursing** Vol 10, No 11
- Rhinehart E., Friedman M M., McGoldrick M. (2005) **Infection Control in Home Care and Hospice**. Association for Professionals in Infection Control and Epidemiology, Second Edition, Jones & Bartlett Publishers
- Rolfe G, Freshwater D, Jasper M, (2001) **Critical Reflection for Nursing and the Helping Professions**, Basingstoke: Palgrave
- Rolfe G, (1998) **Expanding Nursing Knowledge**, Oxford: Butterworth Heinemann
- Rosdahl C B, Kowalski M T, (2007), **Textbook of basic Nursing: Lippincott's practical nursing**, London: Lippincott Williams
- Royal college of Nursing. (2004), **Research Ethics, Royal college of Nursing guidance for Nurses**. London: RCN
- Royal College of Nursing (2005), **Methicillin-resistant Staphylococcus aureus (MRSA): Guidance for nursing staff**, London: RCN
- Russell A D, Hugo W B, Fraiese A P, Ayliffe G A J, Lambert P A, Maillard J Y, (2004), **Russell, Hugo and Ayliffe's principles and practice of disinfection, preservation and sterilization**, Fourth Edition, London: Wiley-Blackwell
- Schmid D, Lederer I, Pichler A M, Berghold C, Schreier E, Allerberger F, (2005), **An outbreak of Norovirus infection affecting an Austrian nursing home and a hospital**, Springer Wien, (117):23-24,
- Schneider J, Moromisato D, Zemetra B, Rizzi-Wagner L, Rivero N, Mason W, Imperial-Perez F, Ross L, (2009) Hand hygiene adherence is influenced by the behaviour of role models, **Paediatric Critical Care Medicine** 10(3): 369-3
- Seigel H J, Korniewicz M D, (2007) Keeping Patient's Safe: An interventional Hand Hygiene Study at an Oncology Centre. An Interventional Hand Hygiene Study, **Clinical Journal of Oncology Nursing**, Vol 11:5
- Shetty N, Tang J W, Andrews J, (2009) **Infectious Diseases: Pathogenesis, Prevention and Case Studies**, London: John Wiley and Sons

- Starr J, Clayton-Kent S, (2004) Hand Hygiene, **Nursing Standard**, 18(40):45-51
- Tashakkori A, Creswell J, (2007), Exploring the nature of research questions in mixed methods research. **Journal of Mixed Methods Research**, 1 (3), 207-211.
- Teddlie C and Tashakkori A, (2008) **Foundations of mixed method research: integrating quantitative and qualitative approaches in the social behavioural sciences**, SAGE, London.
- Thorne, S., Reimer Kirkham, S. & MacDonald-Emes, J. (1997). Interpretive description: A non-categorical qualitative alternative for developing nursing knowledge. **Research in Nursing & Health**, 2:169-177.
- Thorne, S., Kirkham, S.R. and O'Flynn-Magee, K. (2004) The Analytical Challenge in Interpretive Description. **International Journal of Qualitative Methods** [online]. 3(1). Available at: <http://www.ualberta.ca/~iiqm/backissues/3-1/html/thorniest.html> Accessed on: 11-02-09
- Thorstad I.M. Andersen B.M. (2008) Infection control and methicillin-resistant Staphylococcus aureus in nursing homes in Oslo. **Journal of Hospital Infection**. 70: 235-240. Elsevier Ltd.
- Tobin G and Begley C, (2004) Methodological Rigour within a Qualitative Framework, **Journal of Advanced Nursing**, 48(4): 288-96
- Visscher M (2009) Overcoming Barriers to Hand Hygiene Compliance: Effects of hand hygiene on skin integrity, **Managing infection control** [online] Available at: <http://www.medline.com/media-room/pdf/overcoming-barriers-to-hand-hygiene-compliance.pdf> Accessed on 12/01/10
- Ward D, (2003), Improving Patient Hand Hygiene, **Nursing Standard**, 17(35):39-42
- Wengraf T, (2001) **Qualitative Research Interviewing: Semi-structured, Biographical and Narrative Methods**. SAGE, London
- Whitby, M., McLaws, M.L. (2004) Handwashing in healthcare workers: accessibility of sink location does not improve compliance. **Journal of Hospital Infection**; 58: 4, 247-253
- Whitby M, Pessoa-Silva C, McLaws M, Allegranzi B, Sax H, Larson E, Seto W, Donaldson L, Pittet D, (2007), Behavioural considerations for hand hygiene practices: the basic building blocks, **Journal of Hospital Infection**, 65(1):1
- World Health Organisation (1987) **Definition of an older or elderly person, Health statistics and health information systems**, [online] Available at: <http://www.who.int/healthinfo/survey/ageingdefnolder/en/> Accessed on 20/02/10
- World Health Organisation (2005) **World alliance for patient safety: WHO Guidelines on hand hygiene in health care (Advanced Draft): A summary, Clean Hands are Safer Hands**, Geneva: WHO

World Health Organization (2006) **WHO guidelines on hand hygiene in health care (Advanced Draft): Global Patient Safety Challenge 2005-2006: Clean Care is Safer Care.** [online] Available at: [http://www.who.int/patientsafety/information\\_centre/Last\\_April\\_versionHH\\_Guidelines%5B3%5D.pdf](http://www.who.int/patientsafety/information_centre/Last_April_versionHH_Guidelines%5B3%5D.pdf) Accessed on: 17-01-09

World Health Organization (2009a) **Save Lives: Clean Your Hands** [online] Available at: <http://www.who.int/gpsc/5may/en/index.html> Accessed on: 17-01-09

World Health Organization (2009b) **WHO Guidelines on Hand Hygiene in Health Care: First Global Patient Safety Challenge Clean Care is safer care**, Geneva: WHO

World Health Organization (2010) **Clean Care is Safer Care** [online] Available at: [http://www.who.int/gpsc/5may/tools/training\\_education/en/index.html](http://www.who.int/gpsc/5may/tools/training_education/en/index.html) Accessed on: 05/01/10

Wilson J, (2006), **Infection control in clinical practice**, Third Edition, London: Elsevier Health Sciences

## **Appendix One**

### **Ethical Approval Letter**

## **Appendix Two**

### **Letter Sent to Nursing Homes**

## **Appendix Three**

### **Participant Information Sheet**

## **Appendix Four**

### **Interview Questions**



**Appendix Five**

**Consent Form**