Unclean
a qualitative study of nurses’ reported infection control behaviours

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Unclean: a qualitative study of nurses’ reported infection control behaviours

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A research-based thesis submitted to King’s College London
For the Degree of Doctorate in Health Care

Florence Nightingale School of Nursing and Midwifery
King’s College London

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Abstract

Background
While there is a body of work describing infection control behaviours and factors affecting compliance with guidelines there has been little investigation into understanding and explaining behaviours that occur in everyday practice. Understanding such behaviours may provide a key insight into the challenges of behaviour change. Consequently the main research question in this study is “How can nurse’s infection control behaviour be explained?”

Methods
Using an ethnographic approach this interpretative qualitative study uses vignettes, developed from reported practice, to explore nurses’ perceptions of risk and contagion. Twenty semi-structured interviews using a topic guide and vignettes were conducted with registered general nurses, in three waves. Interviews were transcribed verbatim and analysed using the framework method.

Findings
Three main themes of ‘The classifications of dirt’; ‘Rationalizing dirt related behaviours; and ‘Transitions in place and role’ were identified

Firstly, the acts and behaviours reported by participants are part of a protective self defence system against dirt and germs. Protection is required more rigorously when the origin of the threat is unknown; dirt, waste products and body fluids from self and relatives are perceived as being less threatening. Furthermore, threat is reduced by social knowledge, as the person and their behaviours become known. The behaviours of others are viewed differently; if others are carrying out inappropriate behaviours it is seen as irrational, however the same behaviours in self are explained as rational in terms of protection from unknown.

Secondly, a show is being performed by many nurses, influenced by the perception of patients’ increased awareness of practice and the nurse’s desire to be seen as someone who knows the correct infection control procedures. Participants reported being more
aware of the patients’ scrutiny; this desire to satisfy the patients’ scrutiny may actually take precedence over more rational thought with the aim being to give the impression that infection was taken seriously.

Finally, there is a journey taken by healthcare workers in their working day in which their role and status changes. The participants perceive themselves as entering the unclean hospital environment in a state of cleanliness, achieved by the practices and rituals that are carried out in the home. Because of the protective behaviours they carry out whilst in the hospital they do not recognise themselves as anything but clean until they return to the home environment. It is at this stage that they recognise their state of uncleanliness. A transition has occurred from clean to dirty on entering the home. Now precautions must be taken as the home needs to be protected from any unknown dirt or germs that may have been transported by the participant and order must be maintained. Cleansing is carried out and clothing is dealt with in pre-determined ways.

**Conclusions**

The participants in this study demonstrated that they had the knowledge and education required to understand the principles of infection control procedures, transmission of disease and risk of contagion. Their behaviour exists outside what is taught and accepted by themselves as correct. It is insufficient to say that education can change this behaviour; this behaviour has to be recognised first and foremost by those carrying it out before any attempt can be made to change it.

What is required is an educational programme that is carried out in conjunction with a behaviour recognition campaign. Reflection may also be a way of raising self-awareness, allowing healthcare workers to express their fears regarding dirt and infection before considering whether their own behaviour is based on the scientific rationale and meets policy requirements. Following these interventions an examination of whether beliefs have changed and practice has improved should be carried out.
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Chapter 1

1.0 Introduction

The initial inspiration for this study came from Pittet’s paper presented at the Hospital Infection Society Annual Conference “The Lowbury lecture: behaviour in infection control” (Pittet 2004). This paper raised a number of interesting issues in seeking to provide an explanation for nurses’ infection control behaviours. For Pittet many factors including knowledge and perception of threat affect compliance with infection control policy and practice. Pittet called for these behaviours to be explored, explained, and changed by drawing on a combination of behavioural science, microbiology and epidemiology.

Shortly after reading this paper I visited an acute ward setting where I watched a healthcare assistant complete the clinical observations on a bay of six patients. It was fascinating to watch her wear the same pair of gloves for the whole process, and continually touch her face and lift the top of the rubbish bin using her hands instead of the foot pedal. On completion of the task she removed the gloves, moved to the next bay and put on a clean pair. In the next bay she joined a staff nurse who was administrating the medications to all patients in the bay wearing the same pair of gloves throughout. As I passed the bay the staff nurse was carrying drug charts in one hand and picking something up of the floor with the other but did not remove or change the gloves after either action.

My understanding of this behaviour was that it fell outside recommended practice and did not meet any recognised requirements for infection control. Sometime later I discussed my observations with a senior clinician, who recognised the account and asked the question that kept occurring to me, in a perplexed and somewhat exasperated tone

“What is that all about?”

The desire to gain a deeper understanding of these practices coupled with the effects this behaviour may have on the spread of infection started to formulate the thesis question. The spread of infection is a significant ongoing problem within the National
Health Service (NHS) that has not been resolved despite repeated government initiatives. Only recently the Chief Executive of NHS London was quoted in a national newspaper as saying that Methicillin Resistant Staphylococcus Aureus (MRSA) rates had increased in London in 2010 (Guardian 16/10/10).

The control of infection within the hospital setting is an ongoing challenge for the NHS constituting a considerable drain on resources. As far back as 1860, Florence Nightingale emphasised the importance of hygiene, cleanliness and standards of care yet despite this infections in hospitals and other healthcare settings continue to be a major concern for health services (Department of Health 2003). The cost of treatment and management of Healthcare Acquired Infection (HCAI) has continued to rise over the years, a fact that was demonstrated clearly by Plowman et al (1999). The cost to the NHS from these infections was estimated at £1 billion per year in 1999 (Plowman et al) and it was apparent that the Department of Health, in conjunction with the NHS, needed to have guidance and policies regarding the reduction of HCAI that were both understandable and achievable. They needed to reduce this cost and ultimately reduce patient suffering and unnecessary loss of life.

In 2000 the National Audit Office (NAO 2000) reported that infection control was not high enough on the NHS agenda and that while infection may not be completely preventable, rapid detection and treatment were essential. The pursuit of other key policies and priorities were said by the NAO to be adversely affecting attempts to control HCAI and this had been compromised even further by an increase in the number of contagious outbreaks such as Norovirus. The NAO called for more information on the extent and cost of HCAI and the implementation of approaches aimed at changing staff behaviour in an attempt to reduce the risk of HCAI.

Whilst the Department of Health (DH) invested considerable time and effort in an attempt to address HCAI (DH 2000) the number of patients diagnosed with infections that they did not have on admission to hospital remained high with estimates at 10% (Plowman et al 2001). Subsequent documents ‘The epic project’ (DH 2001a) and ‘Standard principles for preventing hospital-acquired infections’ (DH 2001b) provided guidance on infection control precautions for all healthcare workers. The recommendations covered four main areas; environmental hygiene, hand hygiene,
protective equipment and the use and disposal of sharps. The crucial importance of hand hygiene and hand decontamination along with clear guidance on the use of protective clothing based on an assessment of risk of transmission was also clearly highlighted. Gloves were given special mention; it was noted that they should not be worn unnecessarily and that prolonged and indiscriminate use should be avoided. Despite this guidance, the impact was not significant and the project was subsequently criticized on a number of issues (Graves et al 2001).

Consequently the policy document ‘Winning Ways: Working together to reduce Healthcare Associated Infection in England’ (DH 2003) recognized that despite previous initiatives in the area of infection control, HCAI had not been a priority for action when compared with other aspects of healthcare. Although perhaps initiated by world events, such as the outbreak of Severe Acute Respiratory Syndrome (SARS), the threat of bio terrorism and fear of a virulent strain of influenza which would become pandemic (DH 2003), the document highlighted that despite extensive guidance on infection control in the preceding eight years there had been little or no improvement and that work still needed to be done.

The Department of Health paper ‘Towards cleaner hospitals and lower infection rates’ (DH 2004) identified that cleanliness was still a major problem for the NHS with the incidence of MRSA growing and continuing to cause concern. The document highlighted that an extra £68 million had been spent on improving cleanliness and tidiness in hospitals since the ‘NHS Plan’ was launched (DH 2000) and that through the use of a self assessed benchmarking tool, Patient Environment Action Teams had been assessing hospital cleanliness from a patient’s perspective since 2000. These teams reported a consistent improvement, with 22% of hospitals achieving a good standard of cleanliness in autumn 2000 rising to 78% in summer 2003. However it was recognised that while cleanliness contributed to the reduction in HCAI, preventing these infections was a much more complex issue and that of all the HCAI, caused by a wide variety of micro-organisms, MRSA had become a significant problem. While there was a demonstrated improvement and examples of good practice identified within the UK, it was clear that further improvements were still needed. To this end ‘Towards cleaner hospitals and lower infection rates’ (DH 2004) set out a new campaign for action that included ensuring cleanliness was at the
forefront of everyone’s mind. These actions included a new checklist for nurses, ‘think clean’ days, ‘think clean’ road shows and a ‘cleanyourhands’ campaign which consisted of posters, leaflets and badges and aimed to give both staff and patients ownership of the campaign. Significantly it also encouraged patients to challenge workers to clean their hands. This campaign was subsequently developed by the National Patient Safety Agency (2008) and is still active today.

In addition, the ‘Saving Lives Programme’ (DH 2005) was aimed at reducing HCAI including MRSA. This programme, which was developed by the Department of Health and the NHS Modernisation Agency, aimed to raise healthcare workers’ awareness of the contribution they could make in reducing infection rates, making infection control ‘everybody’s business’. Primarily designed for the hospital setting, the programme consisted of self-assessment and action planning tools and provided an overview of current best practice. The self-assessment tool helped to identify areas that needed improving and action planning and built on the work already started through the ‘Winning Ways: Working together to reduce Healthcare Associated Infection in England’ (DH 2003) and ‘Towards cleaner hospitals and lower infection rates’ (DH 2004) papers. These papers both emphasised the responsibility that all health workers have in regard to infection control. Amongst other key points, these papers called on the health worker to provide high standards of hygiene in the clinical area and to comply with hand decontamination practices and the appropriate use of protective clothing. The subsequent publication ‘Clean safe care’ (DH 2008) highlighted that despite all attempts to control them HCAI had remained prevalent for 25 years. This document brought together recent initiatives with ongoing policy and outlined current campaigns and guidance. Several campaigns, including ‘Saving Lives’ (DH 2005), were reintroduced (DH 2007a) and tools developed in line with the ‘Health Act’ (DH 2006), commonly known as the Hygiene code, were established to tackle the problem. ‘Clean safe care’ (DH 2008) emphasised how all staff play a part in the prevention and control of HCAI and reiterated the importance of the ‘cleanyourhands’ campaign.

However, despite these repeated government initiatives, and some reported improvements in the control of HCAI (NAO 2009), there is evidence to suggest that infection spread is still poorly understood by both healthcare workers and the general
population and that practices may still not be underpinned by sound knowledge and evidence (Easton et al 2007, Nichols and Badger 2008, Morrow 2011). There is also evidence to suggest that rituals, recognised in nursing practice generally (Wolfe 1986, 1988, Philpin 2002) also exist in infection control practices (Bree-Williams and Waterman 1996, Hallett 2000). This is further supported by personal observation and anecdotal evidence from colleagues which suggest that inappropriate infection control behaviours, particularly in relation to protective clothing, are still occurring in the clinical area.

Pittet (2004) suggested that the behavioural sciences may help to understand infection control behaviours and improve healthcare practices. While others have concurred with this approach in principle (Morrow et al 2011) this behaviour has largely remained unexplained. Pittet identified the need to “access the key determinants of infection control practices and behaviour promotion” (2004 p1) amongst healthcare workers and called for studies to assess these determinants. According to Pittet, understanding the motivation behind a specific behaviour is a significant step towards modifying behaviour.

From an anthropological view point, Caprara (1998) argues that while the epidemiology of a majority of infectious diseases is widely known, the interpretations of contagion and the socio-cultural aspects of infection are unexplained. The study of various interpretations of contagion is therefore important if we are to implement and promote health programmes. In order for any change in health related behaviour to be successful, the meaning behind the behaviour must be explored and explained and any hidden meanings must be identified and interpreted (Caprara 1998). Behaviour cannot be changed if the belief systems that inform it are not understood. Understanding behaviour in the context of infection control in the healthcare setting and the belief systems that drive it may ultimately help address the lack of success so far achieved by traditional change strategies and policy.

Following an extensive review of the literature and an examination of national and local policies this thesis presents a study examining nurses’ infection control behaviours. Using an ethnographic approach the study considers if nurses’ infection control behaviours within an Acute NHS Trust can be explained, gaining insight into
the perceptions of risk regarding infection control, the behaviours nurses adopt to reduce risk and the belief systems they are operating from.

The study seeks to examine and explain nurses’ infection control behaviours with the aim of providing an explanation for those behaviours that appear to be outside policy. The aim of the study is to provide a richer understanding of nurses’ infection control behaviour by asking “How can nurses’ infection control behaviours be explained?” Through nurses’ own descriptions, explanations and interpretations of practice, an understanding of their perceptions of risk in relation to infection is sought. The study also aims to construct a representation of what happens in practice, based on the interpretations that nurses provide, offering explanations for this behaviour and its context within the hospital setting.

1.2 Organization and content of the thesis

Literature, which supports the rationale for the study and directs the research question, is drawn from a variety of sources, including microbiology, psychology, sociology and anthropology, and is presented in Chapter 2. Here transmission of infection and infection control practices are presented together with a brief discussion of the historical background to the concepts of infection. Explanations of behaviour, hygiene practices and healthcare workers’ perceptions of infection risk are also considered. The study’s design and methods, including the main methods of data collection and data analysis are included in Chapter 3. The findings are presented in Chapter 4. Chapter 5 situates the findings within contemporary literature and policy. Chapter 6 presents recommendations and implications for practice.
Chapter 2
Literature review

2.1 Introduction
The aim of this chapter is to explore what is known about infection control practices that occur within the healthcare setting. Published evidence and literature will be examined in order to elucidate healthcare workers behaviours. An initial search of the literature was conducted in 2005 and covered the decade 1996-2005. However much of the work pertaining to infection control dates from considerably earlier than this and, where relevant, or in the absence of more recent work, this literature has been included. This literature formed the basis for the empirical research and the study design. In the light of data analysis the literature was reviewed again in 2008 when more recent literature was added. However as this literature did not influence the study’s design and conduct its contribution has been kept to a minimum here.

The first section of the chapter draws from microbiology and science to outline the transmission of organisms within the healthcare setting and identifies the pathogens that cause HCAI. It also provides an overview of what standard precautions should be used and outlines rational means of transmission reduction. Following this the literature review considers what is currently known about specific aspects of infection control practices such as handwashing, the wearing of protective clothing and the use of gloves. It also provides estimates of the financial cost of HCAI and the implications they have on patients’ care.

Next, the review critiques current explanations of behaviour observed in infection control. Several bodies of literature, including psychology, sociology and anthropology, are drawn on to provide explanations about the causes of behaviour. In order to gain further understanding of the behaviours linked to infection, the review presents a brief historical background of how the concepts of infection, spread of disease and dirt has evolved. This helps to illustrate and explore how profoundly, understanding of infection is a social construct. Current practices in relation to cleanliness and hygiene and explanations put forward for this behaviour are also considered. In addition, this section also offers insight into how the risk of infection is perceived by both healthcare workers and the population as a whole, shedding light on
rational and irrational behaviours and identifying the areas that remain unexplained or where evidence is lacking.

The final section of the review considers what factors may influence practice and what strategies can be adopted if behaviour needs to be changed. It considers educational strategies, role modelling and the influence the media can have on behaviour in clinical practice.

2.2 Search strategy
A search was initially conducted utilizing the databases Biosis, Embase, Medline, PsycINFO, CINHAL and BNI using the terms infection control, healthcare workers, contagion, risk, perception, nosocomial infection, hospital acquired infection and healthcare acquired infection. Truncation was also used to retrieve all possible variations of the root words as was the AND/OR option. Published articles in the national press were also considered and the Lexis-Nexis database was used to identify articles in five national papers relating to infection control and hospital infection. Academic Library catalogues were also searched for any other relevant books not identified by database searches.

This primary search highlighted the need to extend the search to include a number of specific factors that influenced infection control. Once initial themes had been identified further searches were conducted in the same databases using the terms nurses uniforms, protective clothing, SARS, HIV, hand hygiene and universal precautions. A number of focused searches stemmed from these searches; for example with regard to protective clothing separate searches were carried out using keywords aprons and gloves. The Science Direct website was also searched using the term universal precautions.

As the nature of the topic became more focused the concept of cleanliness and hygiene within the home emerged. The databases IBSS, ASSIA, SSCI and WoS were searched using the terms cleanliness, dirt, household germs and social representations. The incorporation of the terms filth and dirt provided more literary and historical works dating to the 18th century; indeed the literature regarding cleanliness dates to before the Bible, with some evidence of hygiene practices dating back as far as 3200
BCE (Curtis 2010). Where appropriate historical works have been used and seminal work has been included. In addition secondary sources have been obtained following ancestry searching.

2.3 The spread of infection within today’s health care settings

Infection control and HCAI have been identified as significant problems within the healthcare setting (DH 2003, 2004, 2005, 2008), however terminology used when discussing HCAI can be confusing. Infection relating to the healthcare setting can be broadly divided into two specific groups. Firstly, community acquired infections consist of those present or incubating on patient admission. Secondly hospital acquired infections, also termed nosocomial, comprise all other health-associated infections including those that manifest within 14 days of discharge (Burton and Engelkirk 2004). The nosocomial infections, more recently termed healthcare associated infections, can be endogenous (infection transmitted from one body site to another) or exogenous (transmitted from another person or from the environment) (Mims et al 2004). Additionally some infections are termed iatrogenic meaning physician induced, for example the infection of a surgical wound, which may be either endogenous or exogenous, but would not be present if there were no surgical wound in the first instance (Burton and Engelkirk 2004).

2.3.1 Pathogens causing HCAI

The most common pathogens that cause nosocomial infections are: Gram-positive cocci: *Staphylococcus aureus*; Coagulase-negative staphylococci; *Enterococcus* group of species and Gram-negative bacilli: *Escherichia coli*; *Pseudomonas aeruginosa*; *Enterobacter* group of species and *Klebsiella* group of species (Burton and Engelkirk 2004, Mims et al 2004).

In addition, the increased use of antibiotics and the development of stronger broad-spectrum antibiotics, combined with the increased scope of surgical interventions and invasive techniques have given rise to an increase in multi-resistant organisms as well as an increase in the fungus *Candida* (Burton and Engelkirk 2004). Antibiotic-resistant gram-positive organisms are of particular significance in nosocomial infection, with an increase in MRSA and resistant strains of Coagulase-negative staphylococci and enterococci.
Urinary tract infections have been identified as the most common nosocomial infection although there are also significant numbers of upper respiratory tract, surgical wound and blood infections (Gould and Brooker 2000, Burton and Engelkirk 2004, Mims et al 2004). Additionally, gastrointestinal infections can be caused by Clostridium difficile (c.diff) which, although an indigenous microflora of the colon, can cause infection when antibiotic therapy is given. The antibiotics may kill off other susceptible microflora and, in their absence, c.diff multiply and toxin levels are raised (Burton and Engelkirk 2004).

A number of viruses can also cause hospital acquired infections and can affect both patients and staff. Most common are those acquired by the respiratory route, direct contact, contact with contaminated fomites and contact with blood-contaminated fomites. When transmissibility and susceptibility of viruses are combined the resultant risk of hospital infection is highest for influenza, respiratory syncytial virus, rubella, hepatitis B and C and HIV in countries where screening is not carried out. However, there is also a risk from parainfluenza, adenovirus, rhinovirus, rotavirus, enterovirus and hepatitis A (Mims et al 2004).

2.3.2 The transmission of micro-organisms in the healthcare setting
The source of hospital acquired infection may be human, i.e. patients, staff and visitors, or environmental, including food, water, air and any contaminated objects (Mims et al 2004). Spread from the reservoir or source to the host can be airborne, droplet, direct contact, indirect contact or via a common vehicle (see figure 1).
It is important to acknowledge the mechanisms of transmission and recognise that healthcare workers act as reservoirs and carriers for micro-organisms that need a reservoir in which to live; the body provides this reservoir (Gould 2005). A chain of infection transmission which starts with the infectious agent, then the reservoir, a portal of exit, a means of transport, a portal of entry and finally a susceptible host, is needed (Gould 2005). Micro-organisms are known to be carried not only on healthcare workers bodies, but also on their uniforms. Uniforms have played a symbolic role throughout the history of healthcare; however the perceived benefits of

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*Figure 1. Pathogen Transmission in Hospital Infection, Mims et al 2004*
wearing protective clothing correctly in relation to reducing HCAI are now evident (Pratt 2007). Aprons, now generally plastic, are currently worn in most healthcare settings to reduce the risk of uniform contamination from bacteria and microorganisms that are common and problematic in the clinical setting.

Severe problems have been encountered from infection caused by MRSA, Vancomycin Resistant Enterococci (VRE) and Clostridium difficile (C.diff), although infections from others, for example Klebsiella and pseudomonas (gram negative bacillus), are also reported, causing pain and suffering to patients and raising costs within the NHS (Gould and Brooker 2000). The advances of technology and medicine have brought about their own problems with the advent of opportunistic microorganisms and antibiotic resistant strains. According to Dancer (2002) nearly all antibiotic therapy can be associated with C.diff colitis which is opportunistic, although the evidence suggests that the cephalosporins are the most significant causative factor and that C.diff occurs most frequently in patients receiving these. Likewise patients who receive antibiotics, particularly beta-lactams, are more likely to acquire MRSA with the rate of contracting MRSA reduced as the rate of cephalosporin usage is reduced, as is the rate of VRE (Dancer 2002). Resistant gram negative bacilli can also be controlled through the restricted use of antibiotics, again in particular cephalosporins, although controlled antibiotic prescribing alone cannot address the problem (Dancer 2002). Other measures to protect patients, including general hygiene (Dancer 2002), hand washing (Pittet et al 2000) universal precautions (Gershon et al 1995) and protective clothing, need to be implemented properly in order to fully address HCAI and infection transmission.

In his 1998 work, Armstrong chronicles the decline of the hospital in terms of safety for the patients and the emergence of the belief that the hospital had become a place of danger for some patients. By the mid 20th century it was recognised that infection contracted within the hospital environment was an expanding area of concern. Fever and isolation hospitals were deemed to have failed, as quarantine was often too late and the inmates were at further risk from each other. The notion of cross infection was recognised, as was the risk from asymptomatic carriers, patients or staff on the wards. This recognition brought about a significant change in the way patients were treated and their length of stay. Earlier mobilization was the order of the day, rather than long
periods of bed rest and the value of community care was brought to the fore (Armstrong 1998). However the risk to patients from cross infection and HCAI continues to be a problem today, with escalating cost, patient suffering and potential death, still a significant issue.

In 1999 Plowman estimated that the total treatment cost of a hospital stay increased by an average of £3,154 per infected patient with the consumable element of this accounting for an increase of £325 each. Furthermore, the average length of stay increased by 14 days. Urinary tract infections (UTI) were the most common type of infection accounting for almost one third of all HCAI in Plowman’s sample (107/309) and caused an average increase in treatment cost of £1,327 per patient with consumables increasing by £70 and length of stay by 6 days. The most expensive single infection in terms of cost was found to be blood stream infections. More than one infection cost significantly more at £9,152 per patient with the consumables element of this constituting an average of £1,029 more per patient.

However HCAI are not just a drain on resources. For many patients there is the real possibility that their infection may result in death. While the financial burden to the NHS and the 5000 avoidable deaths from HAI per year are well documented (NAO 2000), the emotional and financial burden suffered by the family and relatives of these patients cannot be ignored. The emotional burden to healthcare workers who are faced with caring for a patient who is suffering from an avoidable HCAI or who dies as a consequence is also significant. Cost cannot be quantified in purely financial terms and there is evidence to suggest that this emotional cost to nursing that is often overlooked or ignored (Smith 1992).

2.3.3 Standard precautions and rational means of transmission reduction

Many blood borne pathogens that may be transmitted through contact and exposure, such as HIV and hepatitis, have potentially serious or fatal consequences for the individual concerned. To decrease the risk of blood borne exposure, safe practices for healthcare workers have been encouraged since the early 1980s (Gershon et al 1995). These universal precautions encompass the wearing of protective clothing, including gloves, eye protection and outer clothing and the correct disposal and use of sharps and needles. While universal precautions may have originated from a desire to reduce
the risk of exposure amongst healthcare workers, for many, universal precautions, now superseded by standard precautions (Pratt 2001, 2007), are standard practice where any risk of contamination or infection is possible. Universal precautions should be carried out whenever there is a risk of contamination from body fluids; however, despite the potentially lethal nature of this contamination, precautions are not always taken and protective behaviour is not always apparent or appropriate and remains unexplained (Gershon et al 1995, Pittet 2004).

In 2003 the National Institute for Health and Clinical Excellence (NICE), an independent organisation within the NHS providing evidence based national guidance (England and Wales) for healthcare professionals, patients and carers, produced “Clinical Guideline 2, Infection control: Prevention of healthcare-associated infection in primary and community care”. The guideline, which is aimed at anyone giving care, gives recommendations on standard principles for preventing HCAI. The standard principles are then discussed in relation to long-term urinary catheters, enteral feeding, and central venous catheters.

The standard principles cover hand hygiene, use of protective equipment, and the safe use and disposal of sharps. NICE recommends that hands should be decontaminated before each and every patient contact and after any activity that could result in the hands being contaminated, whether potential or actual. They provide guidance on hand washing techniques, as well as the use of alcohol hand rubs and emollient hand cream. NICE recommends that selection of protective clothing is based on an assessment of the risk of transmission of micro-organisms to the patient or the health care worker’s clothing or skin. It recommends that gloves be worn for invasive procedures and for all activities that have been assessed as carrying a risk from body fluids or contaminated instruments. Additionally, it recommends the use of disposable plastic aprons when there is a risk that clothing may be exposed to all body fluids with the exception of sweat. Gloves and aprons should be single use, should be removed immediately on completion of the patient episode and must be changed between caring for different patients. There is emphasis that hands need to be decontaminated after glove removal and that glove usage does not negate the need for hand hygiene practices.
2.4 Infection control practices in the health care setting

For many Semmelweis is considered to be the pioneer of hand hygiene after his insistence that his students and doctors washed their hands between patients resulted in a reduction in patient mortality (Nuland 2003). However his views were considered radical by the medical profession in the mid 19th century, resulting in the refusal to accept his findings or implementation of his recommendations. Semmelweis not only failed to convince the profession that hands could transmit disease but he also failed to convince them of the benefits of the use of chlorine solution as a preventative measure. Hand hygiene today is clearly acknowledged as a contributing factor in the prevention of cross infection and HCAI, as is the wearing of protective clothing (Babb et al 1983, Larson 1988, Sparrow 1991, Pittet et al 1999a, Gould et al 2007). Despite this, compliance with hand hygiene guidelines has been reported as low as 50% (Pittet et al 1999a, 2000, Creedon 2005) although there have been calls for more robust research exploring compliance in hand hygiene to be carried out in a wider range of clinical settings (Gould et al 2007).

Furthermore, Sparrow (1991), investigated whether nurses should wear uniforms or their own clothes and proposed that the role of nurses uniforms in cross infection be investigated; however little research has been conducted in this area. Candlin and Stark’s (2005) documentary analysis of literature relating to plastic apron wear by nurses during direct patient care identified three main categories that influenced practice; knowledge of infection control, symbolism and ritualistic practice. They reported that nurses’ knowledge was still lacking, particularly regarding contamination of uniforms and the use of aprons to prevent it. While aprons were seen by some as symbolic, representing cleanliness and purity, their use was suggested to be ritualistic and not supported by a knowledgeable rationale which required further examination. Asking whether nurses’ infection control behaviours can be explained may shed light on behaviour that appears to be ritualistic and unsupported by a scientific rationale.

2.4.1 Hand washing and hand hygiene

Proficient hand washing is considered to be the most effective means of preventing cross infection (Pittet et al 2000). While the risks of HCAI are increased by invasive procedures and devices which breach the body’s normal defence systems, in the
hospital setting most infection is transmitted as a result of poor hand hygiene by healthcare workers. Both ‘Winning Ways: Working together to reduce Healthcare Associated Infection in England’ (DH 2003) and ‘Towards cleaner hospitals and lower infection rates’ (DH 2004) identified healthcare workers as a major route through which patients become infected, with hand washing identified as vitally important in the control and spread of infection. ‘Towards cleaner hospitals and lower infection rates’ (DH 2004) and the subsequent ‘Now clean your hands’ campaign (NPSA 2008) aimed to involve staff in the campaign giving them a sense of ownership of something they personally played a part in.

As discussed above the bodies of healthcare workers act as reservoirs and carriers for micro-organisms (Gould 2005). Bacteria that are normally present can cause infection when they are transposed to other areas of the body. Poor hand hygiene not only assists this transposition of bacteria but may also inadvertently create an environment that provides ideal conditions for bacteria to live and multiply. Hands that are not dried fully have been identified as providing these conditions (Larson et al 1988). Sanderson and Wiessler’s (1992) study of hand contamination by coliforms found that healthcare workers’ hands could become heavily contaminated with bacteria. In addition hands that are not cleaned in between each patient contact and patient/environment contact are increasing the risk of cross infection significantly (Gould 2005). Karabey et al’s (2002) direct observational study of 57 healthcare workers in an intensive care unit in Istanbul, although not necessarily comparable to UK intensive care units, identified MRSA and Gram-negative bacilli such as Klebsiella and Escherichia coli on the hands of 57% of healthcare workers, clearly demonstrating the ability for transportation of bacteria and the potential of infection from poor hand hygiene.

Although the environment plays a significant role in the transmission of infection (Gould 2005), and nurses may be aware of possible transfer from patient to patient, they may not have considered all the possible reservoirs where bacteria may be thriving and how this affects the need for hand hygiene. O’Connell and Humphreys (2000) identified reservoirs of MRSA in dust and ward furnishings such as blinds, screen and curtains. Healthcare workers may not readily equate touching these surfaces with infection contamination and infection transmission. Gould (2005) cites a
number of possible environmental reservoirs from the more obvious, for example bedpans and commodes, to those that may not be immediately recognisable as reservoirs, for example, computer terminals. Pessoa-Silva et al (2005) found by using a questionnaire based on the theory of planned behaviour that although 78% of respondents had a positive attitude towards hand hygiene after direct patient contact this was reduced to 50% when considering contact with the environment. Additionally Karabey et al (2002) isolated seven different nosocomial organisms from the inanimate environment within a Turkish intensive care unit. These included MRSA, Methicillin sensitive staphylococci aureus, non-haemolytic streptococci, pseudomonas, klebsiella and enterobacter from a multitude of surfaces including desks, desk drawers, phones, pens, mobile x-ray machines and soap dispensers. Organisms were also found on medical equipment such as sphygmomanometers, thermometers, scissors and ambu bags. While these articles may not immediately be synonymous with infection transmission, Wendt et al (1998) demonstrated that enterococci may survive for up to 4 months in the dry environment. Furthermore VRE contamination of the environment may be a source of infection for an extended period of time even when the source of the primary contamination has been removed (Wendt et al 1998).

While the concept that hand washing will reduce HCAI may seem logical and perhaps somewhat simplistic, studies have consistently shown that compliance with hand hygiene protocols is generally poor (Larson and Kretzer 1995, Thompson et al 1997, Pittet et al 1997, Pittet et al 1999a). Reported factors that affect compliance including skin irritations, the wearing of gloves, nurse patient ratio, simply being too busy, level of risk and type of patient as well as the quality and availability of the facilities (Larson and Kretzer 1995, Kretzer and Larson 1998, Pittet et al 1999a, 2000, Pittet 2000). Indeed Pittet et al (2000) identified 20 main reasons for poor compliance with hand hygiene, in addition Jenner (2006) reported that healthcare workers sometimes believe they have carried out appropriate hand washing, when in fact they have not, and that perception of peers’ compliance with hand hygiene was low (Pessoa-Silva 2005). The perception of actions carried out and the low opinion of others’ practices was identified as being below 50% for most procedures by Pessoa-Silva (2005) however this result was not consider further and requires further explanation. The failure to recognise how own actual behaviour does not reflect recommended practice
could also offer some explanations as to why nurses’ infection control behaviours do not always follow procedure.

Pittet et al’s (1999a) study found that compliance with hand hygiene was poor, with only 48% compliance from 2,834 observed hand hygiene opportunities; this rate may have been increased by the Hawthorne effect during the observation. Hand washing compliance varied according to the type of care being given, with compliance being lowest for procedures that were associated with a high risk of transmission and higher for low risk opportunities. The lowest compliance was found in intensive care units where opportunities were more frequent. Paediatric units had the highest compliance, although the activities in these areas were of lower risk and opportunities were less. Nurses’ compliance was higher than other healthcare workers and compliance over the weekend shifts was also higher. Pittet et al (1999a) conclude that high demand, which reflects high workload, was associated with low compliance, although this was not the only factor; under staffing also decreased compliance and raised the risk of infection, especially when isolation procedures were in place. In addition, hand washing only took on average 8-20 seconds which according to Pittet et al (1999a) is probably too short to be completely effective. However, as Pittet et al note, if hand washing opportunities occur on average 40 times per hour in an intensive care unit then the time required for this makes full washing unrealistic and the introduction of bedside antiseptics might address this problem.

A systematic review of the effectiveness of interventions aimed at increasing hand washing (Naikoba and Hayward 2001) found that research on the topic was limited and generally of a poor quality. Most of the studies reviewed had multiple limitations including; small sample size; lack of (or inappropriate) control groups; and most of the studies being carried out in Intensive Care Units, limiting their generalisability. Despite these limitations Naikoba and Hayward (2001) conclude that interventions should include a combination of education, reminders and regular feedback on hand washing performance for the most positive effect.

One example of a programme to improve compliance with hand hygiene is Pittet et al’s (2000) study. Carried out in a teaching hospital in Geneva, the study focused on improving compliance with hand hygiene by introducing a hand hygiene campaign,
monitoring hand hygiene compliance before and during the campaign. The research team had previously identified that compliance with hand hygiene was low (Pittet et al 1999a) and aimed to establish whether the introduction of a more convenient bedside hand disinfection would improve compliance with hand hygiene opportunities. In total 20,000 hand hygiene opportunities were observed over the three year campaign with a statistically significant progressive increase in compliance identified from 48% at the start of the campaign to 68% at the end; frequency of hand disinfection showing the most significant increase. In addition MRSA transmission rates decreased and the consumption of alcohol-based hand rub solutions increased. Pittet et al used a multimodal multidisciplinary approach, which they believed contributed to the success of the programme. However, while compliance increased generally, doctor compliance remained low for reasons that, according to Pittet et al “remain both unsolved and vexing” (2000 p1311). This seems to mirror “Semmelwies’ centuries old” observations (Jarvis 1994 p1311) that doctors failed to wash their contaminated hands and caused more nosocomial infections than other healthcare workers. In terms of the individual interventions, Pittet et al (2000) recognise that using a multimodal approach may limit the extent to which each individual intervention contributed to the success of the campaign, however it was felt that the campaign as a whole had been a success.

In a study of healthcare workers’ compliance with hand decontamination practices in Ireland, Creedon (2005) also sought to identify changes in practices after the implementation of a multifaceted interventional hygiene programme. The initial compliance of 51% mirrors that of Pittet et al (1999a); however the seven week post-test results show a significant increase with 83% compliance recorded. In this study, although doctors’ compliance was indeed lower than other groups at 31%, there was some evidence of improvement at the post-test stage with a recorded result of 55%. However, while compliance by physicians has been reported as generally lower than other healthcare workers they may be what Gershon et al (1995) call “out of the loop” (p233) in terms of the current safety climate within the organization.

Other studies worldwide have supported the belief that hand hygiene is poor (Won et al 2004, Akyol et al 2006) and in some cases have identified an even higher incidence of non-compliance (Karabey et al 2002). The relatively small-scale study by Karabey
et al (2002), conducted in Turkey, reported that of the 298 hand hygiene opportunities observed for nurses, only 45 resulted in hand hygiene, giving a total of 15% compliance which is well below the reported rate in both the UK and Europe. In addition, the six doctors observed had 0% compliance. Difficulties regarding hand washing were identified including no antiseptics or paper towels being available, and rubbish bins without foot pedals, all of which have been identified previously as barriers to hand hygiene (Huskins et al 1996). Furthermore healthcare workers had unnecessary frequent contact with beds, blankets and linen because they often lent on them when at the bedside. While this may provide a rational explanation for some of the non-compliance, healthcare workers did manage to overcome these difficulties and carry out appropriate hand hygiene in a minimal number of instances.

More recently Whitby et al (2006), in an attempt to explain why nurses did not wash their hands, analysed responses from 754 nurses in Australia. They found that the act of hand washing was influenced both by the purpose of the procedure and the nurses’ view of the procedure. Hand washing was also influenced by the setting in which it was carried out, for example, the community or the hospital, and the components of the hand washing procedure. However Whitby et al (2006) acknowledge that they can only predict intention to wash hands; they did not actually observe practice or techniques.

While it has been highlighted that most studies of hand hygiene interventions included outcome measures, they often overlooked hand washing techniques and did not always use the most appropriate research methods (Naikoba and Hayward 2001, Gould et al 2005). Research findings do however suggest that techniques are rarely carried out for the correct length of time, even when knowledge regarding appropriate hand washing practices is good. There is recognition that behaviour is not always influenced by knowledge but this has not been explained further in the context of hand hygiene.

2.4.2 Protective clothing and uniforms
As early as 1969 (Speers et al 1969) the presence of staphylococcus aureus was reported on nurses’ uniforms, although the significance at that time was reported as being difficult to assess. It was felt that the micro-organisms found were more likely
to be due to a build up of contaminants through prolonged wearing and Speers et al (1969) recommended providing a clean uniform every day rather than the wearing of plastic aprons to address this. Noteworthy now, in light of the more recent evidence that even ‘clean’ uniforms can be contaminated and that bacteria and organisms live for significant lengths of time not only on uniforms, but also on plastics and synthetics (Neely and Maley 2000).

Over the years bacterial contamination of healthcare workers’ uniforms has been demonstrated (Babb et al 1983, Wong et al 1991, Perry et al 2001) and while evidence of any direct transfer from the material to patients is scant, transfer of Bacillus has been demonstrated. For example Hedin (1993) noted that indirect contact with uniforms was a route for cross infection, while M’Tero et al (1981) demonstrated the transfer of spores from plastic aprons and cotton gowns to a ‘mock’ patient. It has also been noted that some enterococci and staphylococci survive not only on cotton and polyester materials but also on plastic, in some cases for longer (Neely and Maley 2000).

In the UK Perry et al (2001) sampled 57 staff uniforms from one hospital for MRSA, VRE, and C.diff. Some or all of these organisms were present on the ward at the time of sampling. Of the uniforms sampled prior to commencing duty, 39% were positive to one or more organisms. This consisted of VRE on twelve uniforms, MRSA on seven uniforms and C.diff on seven. Three staff had not worn clean uniforms and their uniforms were positive for large numbers of MRSA. At the end of the shift 54% of uniforms were positive to one or more organism with VRE on twenty-two, C.diff on eleven and MRSA on eight. Some areas had significantly higher levels of contamination than others with 92% of uniforms positive in the general medicine area compared to only 8% in the surgical area, although Perry et al do not examine this result further. The results between trained and untrained staff were comparable, with 52% of trained and 58% of untrained staff showing positive results for one or more organism. All the uniforms in the study sample had been laundered at home. The high levels of contamination on clean uniforms at the start of duty suggests that this is often not sufficient, as some organisms survive at lower temperature washes and some survive for long periods of time on commonly worn material and fabrics in the clinical area. Neely and Maley’s (2000) study indicated that staphylococci and
enterococci can survive for days if not months on certain fabric. While all organisms tested by Neely and Maley survived for a least a day on cotton polyester blends, staphylococci lasted 1-56 days on polyester and 22 to >90 days on polyethylene plastic. In addition, the shortest survival time for any enterococcus tested was 11 days, living longer on polyester and polyethylene.

However despite evidence suggesting that uniforms are frequently contaminated, Candlin and Stark’s documentary analysis (2005) found that staff in the UK did not generally know about uniform contamination and some held the view that organisms do not grow on plastic despite evidence to the contrary. Staff in some instances did not see the need to change their uniforms daily nor to change aprons between patients; this led to some wearing the same aprons for a significant length of time and for multiple tasks (Xavier 1999). Conversely, Candlin and Stark (2005) also found groups of nurses that chose specifically not to wear aprons, due to either lack of knowledge, lack of motivation or the apron’s negative symbolism implying dirtiness. Coupled with this was the problem of ritualistic practice that was difficult to change even when staff fully understood the rationale behind the practice. While these factors offer some explanation of the inappropriate or non-use of aprons within the healthcare setting, an observed practice that contributed to the proposal for the current study, this needs to be examined further as understanding behaviour is the first step to a sustained change of clinical practice. Knowledge of the rationale for this behaviour remains low despite the research undertaken to date and the current study aims to develop this further by examining the beliefs that inform it.

2.4.3 Glove wearing
The wearing of gloves has been recommended to reduce the transmission of flora from workers to patients and the contamination of worker’s hands (Boyce and Pittet 2002). However, while the effectiveness of glove wearing in reducing contamination has been demonstrated (Pittet et al 1999b), it is unclear whether glove wearing negatively or positively effects hand hygiene as the evidence is conflicting (Boyce and Pittet 2002). Glove wearing can reduce compliance with hand hygiene (Pittet 2000) and while this is re-iterated by Pessoa-Silva (2005), who identified only a 31% incidence of a positive attitude to hand washing after glove removal, there is some evidence to the contrary (Zimakoff et al 1993). In light of this Boyce and Pittet (2002)
make clear recommendations that healthcare workers should be fully informed of the
limitations of glove wearing and that full protection is not offered. In addition they
reiterate that failing to remove gloves between patients contributes to the transmission
of infection.

Kuzu et al’s (2005) covert observational study of a 28 bedded medical ward, recorded
763 opportunities for glove use. They found that compliance with glove wearing was
59% as opposed to 32% for hand washing. While it has also been noted that
healthcare workers wear gloves in 57% of high risk cases (Lund et al 1994) and they
wash their hands more often after glove use (Zimakoff et al 1993), others have found
that failing to change gloves after use or once they are contaminated is as common a
problem as hand washing failure (Pittet et al 1999a). Classification of high and low
risk tasks may vary from one research team to the next and the categorization of these
should be examined before parallels can be drawn. For example Pittet et al (1999a)
used different categories from Kuzu et al (2005) and as such results are not truly
comparable across studies. Kuzu et al identify both Gould’s (1994) and Lund et al’s
(1994) work as comparable studies that support a high level of hand hygiene
following high-risk contact.

The increased use of glove wearing and hand washing in high-risk areas has been
attributed to a possibility that healthcare workers are trying to protect themselves at
this stage. Kuzu et al (2005) reported that while gloves were worn in 93-96% of cases
of contact with contaminated body fluids or contaminated material they were also
worn for 80% of contact with sterile material cases and 64% of cases involving
contact with clean material, demonstrating minimal use of discriminating factors in
the decision to wear gloves. Kennedy et al’s (2004) comparatively small study also
reported that 76% of healthcare workers wore gloves when they anticipated contact
with a patient’s body fluid such as blood or respiratory secretions. Overall, despite a
high level of knowledge and belief in the importance of glove wearing, the actual
reported wearing of gloves was low, especially when it is acknowledged that
responses were self reported rather than observed and as such desirable practices may
have been over reported which has been recognised as problematic in self reported
behaviour (Jenner et al 2006).
2.5 Explaining or understanding behaviour

It is evident some behaviour is driven by science and the scientific rationale, however despite knowledge and government attention to infection control and recommended practices some procedures are still not being followed and this behaviour remains unexplained. It is evident that HCAI persists and healthcare workers continue to take inappropriate or insufficient precautions. Despite training and education, compliance remains low (Chan et al 2002, Stein et al 2003, Akyol et al 2006). There is evidence that many other factors affect compliance with practice, including perception of own practice and intention, motivation, perception of threat and social or peer pressure (Pittet 2004). Additionally, both Gershon et al (1995) and Gould (2004) found that knowledge did not necessarily correlate with good practice. Gershon et al (1995) noted low compliance with universal precautions in those who reported a high level of conflict between providing patient care and the need to protect themselves. Furthermore compliance was also low in those who reported taking risks in life and perceived the risk to themselves as low. Here both groups work against the rational model regardless of level of knowledge; behaviour is not easily explained as rational and is not supported by education received.

Douglas and Calvez (1990) examined the role of risk takers within the community in relation to contagion and assert that the way that these members respond to contagion and epidemic is alarming for other members of the community. For Pittet (2004) these ‘risky’ infection control behaviours need to be both explained and changed. While microbiology and epidemiology play a significant role in infection, Pittet states that in order to change behaviour we need to draw on behavioural sciences, combined with microbiology and epidemiology to provide three main components of any infection control programme.

Social cognitive models have been used to evaluate predictors of health behaviours (Pittet 2004) and although some have been shown to be weak predictors, the Theory of Planned Behaviour (TPB) which focuses on the link between attitudes and behaviour, has been used to test intentions towards specific infection control measures (O’Boyle et al 2001, Pessoa-Silva 2005). According to this theory, the performance of behaviour is affected by whether it is seen as positive; the ease or difficulty of performing it; and whether it is valued by others. O’Boyle et al (2001), having
identified that internal factors which affect healthcare workers’ compliance with hand hygiene guidelines were largely understudied, utilised the TPB to account for nurses’ motivation to perform volitional behaviours. They sought to estimate overall adherence to hand washing recommendations as well as describing relationships amongst motivational variables, self reported and observed adherence. They also tested the use of an explanatory model of hand hygiene adherence based on the TPB to explain self reported and observed adherence. However, this study found that it was intensity of activity rather than internal motivating factors that influenced adherence to hand hygiene recommendations. This re-iterates Pittet et al.’s (1999a) findings that nursing activity had the greatest influence, although other factors such as being a role model to colleagues may also play a significant part in hand hygiene compliance (Pessoa-Silva et al 2005).

2.5.1 Social representations
Behaviours can perhaps be more easily explained through social representations, which consist of knowledge shared by members of a community about a given subject. According to Moscovici (2000), social representations are defined by general ideas and beliefs used to establish a social order allowing members of a group to make sense of their place in the social world or system they inhabit. Moscovici cites Lewin (1948 p 57) who states that for the individual, reality is influenced by what is socially accepted as reality. While representations are accepted by many, they are re-thought and re-presented in the context of what is considered reality and subject to the influence of many permutations. Social representations are based on theories and ideologies, phenomena that become shared beliefs and represent reality. Social representations also make the unfamiliar familiar, allowing it to become embedded as ‘common sense’ knowledge. According to Moscovici (2000) the mass media has hastened this procedure, making the seemingly unfamiliar part of everyday social representations. Common sense becomes something that is understood by the collective, helping the common sense to become common. Social representation theory considers that shared ideas emerge when a society is faced with a new phenomenon; the mass media is a major source of these representations, both cultivating them and reflecting them (Washer 2004). For example, between 2000-2005 The Times (daily, London) printed 134 articles relating to hospital infection and infection control, the Independent 109, The Daily Mail 178, The Daily Mirror 76 and
The Daily Star 17 representing a broad political spectrum from both the broadsheet and tabloid papers. Although headlines regarding the same stories between these papers varied widely from “Bug that is killing our kids” (Daily Star 2004), to “Hospital blamed as superbug deaths soar” (Times 2004) the impact and influence of the press on the general population as a whole cannot be ignored; between 2005 and 2007 The Times ran 47 stories that related specifically to death from superbugs compared with only 3 that related to survival stories, which does not reflect the actual fatality rate from HCAI. Healthcare workers, while part of a team and wider culture within the hospital setting (Goffman 1968, Greenberg and Baron 1995), are still members of an even wider community and have access to the same shared knowledge which may influence their own beliefs.

2.5.2 Dirt and disease through the ages

In order to understand more fully how infection is now perceived and understood by healthcare workers and the general population it is pertinent at this stage to consider briefly the position of ‘dirt’ and disease through the ages and situate past levels of cleanliness in the context of what we now know. In the past, while diseases and infection may have been linked with any number of concepts including smells, filth and dirt, we now have a scientific explanation which for many provides a rational reason for the transmission of disease. However, despite this advanced scientific knowledge, beliefs and practices still differ and do not always follow the ‘rational’ scientific approach. While today’s hospitals are likely to be much cleaner and safer places than in the 19th and early 20th centuries, dirt and disease still exist and the risk of infection from the hospital environment is real. Working within this setting are members of the wider community, who, whilst exposed to the rational scientific reasoning behind infection spread, are also part of society as a whole and subject to outside influences that help form beliefs and behaviours.

In the mid 1800s it was commonly believed that smells and odours were linked to the spread of disease (Barnes 2005). At the time, the disposal of faecal matter and bodily waste had become problematic, requiring the cess pit system in cities to be replaced by sewers which fed into nearby rivers. Inevitably this untreated sewage gave rise to unpleasant odours and diseases such as diphtheria, typhoid and cholera occurring around these areas of contaminated water. With limited knowledge of pathogen
spread and the faecal-oral route of transmission, conclusions were drawn that disease was transmitted through the inhalation of the odour and fumes. This belief was reinforced by the lack of disease and smell in areas without contaminated water and inappropriate faecal disposal. Those with scientific knowledge were reported to have considered that such smells must be a health hazard; in London deaths from cholera were linked by many physicians to inhaling noxious fumes from the Thames (Barnes 2005). Even as the understanding of bacteriology developed, the link between smells, or miasmatism as it was known, was hard to dispel. According to Barnes (2005) it was not until the late 1800s, following the work of Pasteur, Koch and others, that the faecal-oral route of micro-organisms spread was identified and germ theory, which recognised that many diseases were caused by micro-organisms, was more readily accepted.

For the middle classes of the time, the home was seen as a refuge from the unhygienic city outside (Cleere 2005). According to Cleere (2005) this desire to provide a hygienic environment intensified towards the end of the 1800s as germ theory and transmission of disease was widely acknowledged. For the Victorians, once the pockets of fever or fever nests as these areas within cities were called (Barnes 2005, Cleere 2005) were reduced through improved sanitation, attention turned inwards to the home. Dust and anything with the potential to trap dust became the focus of concern as it was felt that these “dust traps” (Cleere p135) provided the prime environment for germs and diseases to thrive. Soft furnishing, carpets and decorations were of particular concern along with any inaccessible areas of the home. The concept of a home which was light, airy and dust free and thus germ and disease free evolved.

At the same time hospitals were criticised for deficits in planning with lighting, ventilation and overcrowding being areas of concern (Nightingale 1859). Florence Nightingale (1859) noted that the “foul state of the wards” (p3) could lengthen a patient’s recovery for up to 8 weeks once an initial fever had subsided. Nightingale supported the notion of miasma and attributed the spread of zymotic disease (fevers and contagious diseases) in hospitals to the air which was poisoned and breathed by both patients and staff. The hospital could be an unsafe place for both patients and staff and the deaths of both doctors and nurses from zymotic disease (including typhoid and cholera) were reported. These deaths, recorded in 15 London hospitals,
were significantly higher in females than in the general population. Nightingale saw that the air, walls, floor and hospital furniture could all be contaminated by organic matter given off by the sick and that water closets were not ‘safe’ for the sick unless they were soundly built away from the ward building.

2.5.3 Contagion and the concept of dirt
Building on the work of the 19th century scientists, particularly Pasteur and Koch, current technology now allows us to identify micro-organisms, their reservoirs and modes of transmission. Germ theory developed, replacing not only the notion of spread of disease by smell, but also for many the traditional or religious notions of contagion and purity. In examining lay theories of illness, Helman (1994) notes how although many recognise that while the natural world can be held responsible for ill health, one’s specific environment can also contribute. While this may in part link back to the early ideas that bad air can cause disease (Barnes 2005), notions have become more refined, identifying that while climate can affect health, environmental irritants and air pollution, or dirty air, may also play a part in disease and infection (Helman 1994, Bloomfield et al 2006). Herzlich also introduced (1973) the notion of toxicity, a threatening entity rather than a threatening agent such as germs. In relation to toxicity, few people referred to germ spread in the scientific form but instead exampled toxicity not just from germs but also from the environment such as noise, overeating or air pollution from traffic along with cumulative effects where something not harmful to us now, may have the potential to harm us in the future after repeated exposure. Herzlich (1979) reported that threat from the environment was perceived to occur on a daily basis by some, affected by life style, food and the air breathed.

How dirt is viewed and the context in which it is seen in can play a significant part in the response it evokes. Dirt without the scientific concepts of pathogenicity and hygiene has been described as ‘matter out of place’ (Douglas 1966 p44). Douglas (1966) implies that there is a systematic ordering of matter of which dirt is a by product; where there is matter there is a ‘system’ and dirt is seen as matter that has a place but is outside this ordered ‘system’. According to Douglas, this system has a set of ‘ordered relations’; anything out of the system or out of the usual relationship breaches that order. For Douglas dirt is an event which is not unique, it exists because of the system and its relationship to that system and for Douglas links between
symbolism and symbolic purity are evident. Within the system there are ideas of order; Douglas’ simple examples use notions of location deemed ‘unusual’ for items, such as shoes, not normally considered dirty, but placing them on the dining room table would be, or food and cooking utensils in the bedroom, or bathroom equipment in another room challenging the normal classification pattern. There seems to be a socially constructed order to the appropriate placing of these articles, although this may alter as social thinking and socially acceptable views change. Examples in modern western life include the taking of meals in rooms other than designated eating areas and the positioning of toilets and their movement from outside to inside. The outside toilet can be traced back as far as the Bible, where the idea that cleanliness is next to godliness and that God walks amongst the camp and should not witness unclean things is evident (Deuteronomy 23:9, 12-13). However, although the accepted place to position a toilet may have changed in some cultures, the perception of danger from body fluids and waste products and remains (Okely 1983). Attitudes to body fluids and waste products vary throughout the world with some cultures fearing menstrual flow (Okely 1983) where others do not perceive the same risk (Douglas 1966). There is often secrecy around menstruation and fear attached to menstrual blood, for example in Chinese culture menstrual blood is viewed as dirty and feared for its polluting effects (Zxy-yann 2001).

Dirt then may have a place within a system, with defined rules and norms, where cleanliness and pollution can be understood through socially constructed order, rules and beliefs (Douglas and Wildavsky 1982, Douglas 1996). Within the UK many ethnic groups and cultures exist alongside each other and their beliefs and views are largely compatible, although how each individual community responds to the threat of dirt varies. Significantly though, in terms of pollution and dirt, norms and systems within the cultures are normally consistent. Problems may arise however when a group or culture demonstrates systems that are in direct contradiction to the majority. Okely's classic ethnographic study of Traveller-Gypsies in the UK (1983) provides one interesting example. Okely identified a pollution system that was contra to the majority and while Traveller-Gypsies were commonly thought of as dirty they saw others in the same light, “People say we’re dirty. They don’t see that we think they’re dirty” (Okely 1983, p 87). For the Traveller-Gypsies, boundaries for dirt are different and life within the gypsies’ home is ruled by concepts of cleanliness, purity and
pollution of the inner body as opposed to the outer body. According to Okely (1983), for the Traveller-Gypsies, the waste product of the outer body such as skin scales, hair and faeces along with accumulated dirt are potentially polluting if they are re-cycled through the inner body. While local residents may complain that Traveller-Gypsies’ camp sites have excreta everywhere around the camp residents are in fact measuring gypsies against their own understanding of house dwelling and cleanliness. For many living in the UK the idea of human faeces in fields and under bushes does not fit with their structured system and is seen as unclean. In contrast, Traveller-Gypsies do not see tidy litter free camp sites as representing cleanliness and view house dwellers’ gardens in the same way through not seeing external tidiness as cleanliness. Faeces then, away from the caravan and cooking area has no potential to enter the inner body and as such is viewed as not harmful by the Traveller-Gypsies yet harmful by the house dwellers.

For Traveller-Gypsies it is the context of the washing that is important, not the washing itself. Food, utensils and crockery, which can impact on the inner body, have to be ritually clean and are easily contaminated, even a shadow can contaminate. In addition women are considered polluting, a clear divide being seen between the upper and lower body. For example aprons are worn during cooking to protect the food from the woman’s lower body, their underwear must be washed and kept separate from men’s, they must dress according to their rules and should avoid cooking during menstruation and following childbirth as these are considered as highly polluting to men. For the Traveller-Gypsies an apron is worn to protect the food from the women’s dress or clothing, this is in sharp contrast to their house-dwelling counterparts who wear the apron to protect the dress from spillage of food.

In considering further the differences between cultures, clothing may serve a different purpose for each group. Clothing may, for example, be symbolic, and although the connotations may be far reaching, for example the white wedding dress of a Christian bride or the purdah worn by certain Muslim and Hindu societies, others such as the apron are less complex and serve a set purpose. We can see from the example of Traveller-Gypsies that the notion of systems, and dirt being out of the system, can exist even when the actual system is only common to that group. Minorities with their own alternative beliefs and rules can, and do, exist within the wider population.
Furthermore groups, whether they are a defined ethnic group, or a socially constructed group, can, and do, develop their own rules, which are not always based on scientific evidence. Groups such as the Traveller-Gypsies defend their behaviour when questioned by members of others groups, giving the rationale that their members share. Despite scientific evidence to the contrary it can be difficult to suggest that groups should modify or change their socially embedded behaviour.

2.5.4 An alternative view of dirt and disgust
According to Curtis (2007a) disgust of dirt is part of human nature, with dirt and disgust both stemming from the cultural construction in which we live combined with an element of “gut feeling” (p661). Curtis draws on comparisons with the natural world and observes that many animals keep their environment free from faecal material or actively avoid faecal material when eating or grazing. As Curtis points out these animals have not considered microbiology, their behaviour has been influenced by evolution; those that have not practiced these techniques have not survived as a species. Curtis supports the idea that humans also have this hygiene behaviour which is described as automated rather that requiring higher level thinking.

Curtis challenges Douglas (1966) and her supporters who assert that culture is the driving force that creates the concepts of dirt and taboo. If Curtis’ view is supported there are indeed implications for healthcare workers and their role which is in conflict. The behaviours may be influenced by the conflict between automated thinking and what is learnt through education and training, or seen in clinical practice. Education may be ineffective in reducing these behaviours where the natural instinct is towards protection even when evidence demonstrates that it is not required. Additionally if there is a gut feeling to avoid sick members of society (Curtis 2007a), healthcare workers may experience a conflict in their role, through their close contact with the sick which compromises the need to protect self. This conflict, combined with the gut feeling may play a significant part in how healthcare workers behave. Curtis’ approach is a novel way of looking at nurses’ behaviours in attempting to understand why practice is so poor and may provide some explanation of the behaviours this study will examine.
2.5.5 Infection control practices in contemporary western homes

The home environment can have a considerable impact on health, with the transmission of germs and spread of infection playing significant roles. While close contact perhaps seems the most obvious form of transmission, Curtis et al (2003) found that faecal-oral spread of pathogens in the home can occur, particularly when there are infants who are a source of intestinal infection through nappy changing and potty use.

Curtis et al (2003) observed hygiene practices and behaviour of the main carers in ten households where an infant had recently been vaccinated with polio virus and was subsequently shedding the vaccine virus in their faeces. This allowed the virus to be detected in the home environment through faecal contamination. The virus was found to have contaminated toilets, bathrooms, kitchens and other household sites. Faecal coliforms were also found in these areas and a number of sites connected with nappy changing. While Curtis et al accept that the sample size was too small to link patterns of contamination with behavioural level; they did gather some useful information regarding participants’ attitudes to cleanliness in the home and the need for hand hygiene. Hygiene was described by participants as cleanliness, with a hygienic house thought to be one that was tidy and bright. Unhygienic homes were untidy, dirty, smelly and contained faeces and other materials that could spread disease. Hygiene involved personal effort and was a way of protecting babies and fighting bacteria. Household cleaning was prompted by the sight of dirt, with toilets, bathrooms and kitchens needing more cleaning. Deciding whether a home is clean or dirty may however, be more complex that just whether it is tidy or untidy. Attitudes and beliefs can also affect home hygiene practices (Larson et al 2004); according to Pink (2005) the categories used to define whether the home is clean or dirty are influenced by culture and personal narrations, as exampled by the Traveller-Gypsies. Furthermore, while we can be subject to the constraints of cultural forces we do have the ability to break with these and transform our behaviour (Battaglia 1999).

In the context of hand washing after nappy changing, Curtis et al (2003) reported striking findings; hand washing occurred in only 52% of instances following nappy changing, with soap being used for 42% of these times. This shows some similarities to the hand hygiene compliance in clinical practice as reported by Pittet et al (1999a,
Hands were generally washed after toilet use, although 1 in 5 did not use soap. Contamination of door handles and bathroom sites suggested that hand washing after toilet use was not normally the case and certainly not for members of the family who were not observed. Times when participants believed hand washing to be required were fairly consistent, although some participants claimed to always wash their hands after nappy changing when observation showed otherwise. This shows some comparisons to the findings of Jenner et al (2006) who observed hand hygiene in healthcare professionals in clinical practice and compared observed practice with reported practice. This difference between hand washing after toilet use and hand washing after nappy changing suggests that the two activities are seen in a different light and that the significance of the dirt is different. Curtis et al draw parallels with the earlier work of Curtis and Biran (2001) who reported that the faeces of one’s own child or of a child from within the extended family were more acceptable than the faeces of a stranger’s child. Furthermore Kanki et al’s (1994) study of mothers’ hygiene behaviours found that they often did not regard babies or children’s faeces as hazardous.

This view may have implications on how we see our own dirt; it may be that dirt that is seen as self or an extension of self is less threatening than other’s dirt. Both Miller (1997) and Curtis and Biran (2001) assert that it is other people’s dirt that is of most concern. Finally Curtis et al (2003) address the suggestion that too much hygiene may have a negative impact on health, pointing out that ingestion of agents of infectious intestinal disease can never be beneficial to health. They note that whatever the outcome of the hygiene hypothesis, which reports a reduction in allergen exposure, this particular contamination problem needs to be addressed.

In addition, dust continues to be a source of anxiety and concern within the home, with concepts of cleanliness related to the absence of observable dust. There is now evidence to support the Victorians’ belief that environmental dust may be a source of infection (Haysom and Sharp 2003). Haysom and Sharp’s (2003) study of vacuum cleaner contents found salmonella species in 3 out of 76 households. While the sample size was relatively small and no specific link could be identified between the homes, the implications are a significant and useful indicator of contamination within the home. Furthermore in a study of the home environment Rice et al (2003) cultured
79 vacuum cleaner bags for contamination finding that salmonella enterica contamination increased from 4.2% to 27.2% when there was occupational exposure. In these cases containments from the work place were transported into the home; for example cattle farms with known cases of salmonellosis.

Infection therefore may be spread within the home, although a large study of 238 households found two significant factors in the reduction of infection risk; the use of bleach and hot water for washing white clothes (Larson et al 2004). However, as bacteria are found on washed clothes, especially those washed at low temperatures (Larson et al 2004), these factors were perhaps to be expected. Laundry practices have changed over the last 20 years, especially with the introduction of many new synthetic fabrics that would not survive hot temperatures, linked with the increasing awareness of global change and the reduction in laundry times and temperatures that have occurred. However in discussing laundry practices, Shove (2003) sees “the move from boiling laundry to machine washing as being driven by manufactures who redefined cleanliness as the display of whiteness rather than as the removal of germs” (p145). This concept of a display of cleanliness here rather echoes the ideas suggested that a tidy home is a clean home (Curtis et al 2003); the appearance or ‘show’ is important in transmitting the message that this is clean. While this may not appear to be a positive move in respect of infection transmission and has indeed been noted as problematic in a number of studies discussing the use of home laundry services for healthcare worker’s uniforms (Ayliffe and Collins 1989), Patel et al’s (2006) more recent study of contaminated hospital scrub suits found that these could be safely washed and organisms removed at temperatures below 40°C provided they were then tumbled dried or ironed. Furthermore Larson et al (2004) identified that those households that had a member working in health or childcare, or had a child in day care, were no more at risk of infection than the other participants in their study who did not have this contact.

2.5.6 Perception of infection worldwide today

While behaviours in response to hygiene and cleanliness may stem from understandings that are embedded in one’s own social world they are also influenced by the wider society and the perception of risk from disease and infection. This is particularly relevant to the healthcare worker. The threat of infection on a global scale
Global infections are constantly making headline news and the possibility of pandemic diseases is reported freely. Although severe acute respiratory syndrome (SARS) had previously been reported in 30 countries, the 2003 epidemic in South East Asia hit world headlines and introduced a new fear of contagion worldwide. In Japan, one of the few countries in the region not to experience any cases, Teppei et al (2005) found that healthcare workers’ perception of risk was high and that 92% (n=7,282) would have preferred to avoid all patient contact perhaps yielding to the gut instinct to avoid contact with the sick (Curtis 2007a). Nickell et al (2004) also found that anxiety levels of healthcare workers in Toronto were more than double that of the general population, while in Singapore 66% of healthcare workers (n=10,511) felt they were at great risk of exposure to SARS, while 76% were afraid they would fall ill with SARS if exposed (Koh et al 2005). The study by Koh et al (2005), which was conducted in the final stages of the outbreak and at a time when a significant number of healthcare workers had been infected by SARS (approximately 21% of all cases, WHO 2003), demonstrated how healthcare workers are often torn between their duty to their work and concern over infecting members of their family and friends. In that study 82% of healthcare workers were concerned about passing on the infection; 87% admitted that relatives and friends were worried about the risk to the healthcare workers; and 69% had concerns for their own wellbeing. Koh et al, however, assert
that ‘a little fear may be a good thing’ by increasing awareness in those who may not feel that they are at risk. Koh et al also suggest that increased workload and stress raise anxiety in relation to contagion even when risk is not increased. Participants from the hospital that was admitting only SARS patients were less anxious than those whose workload had subsequently increased through the admission of all other non-SARS cases. Koh et al did not delve further into these reactions; however, the findings suggest that with time to consider the situation and rational explanations, precautions could be taken without panic. For the healthcare workers who became stressed due to an increased workload, rational thought was not foremost in their thinking. Those who were busy with non-SARS patients were at considerably reduced risk from the syndrome, however they perceived their risk as greater. Initially in Singapore there were reports of healthcare workers and their families being shunned and being refused access to transport. The government, through the media, turned this negativity around by highlighting the courage and dedication of the healthcare workers resulting in heightened public appreciation of the roles they were undertaking (Koh et al 2005).

Whilst awareness of infections worldwide may be increasing due to press and media coverage, there is a dearth of studies that investigate patients’ perceptions and awareness of HCAI. One questionnaire-based study carried out in the UK investigated whether 113 respondents had heard of the term superbug or MRSA (Hamour et al 2003). Only 44% had heard of either, reporting that this information came from hospital staff, the media or both. Whilst family and friends were reported to have informed 22% of respondents, the media was the most frequently cited source of information. Although those who had heard of ‘superbug’, and MRSA, were reasonably well informed about its transmission and consequences, patients were angry about the risk that these infections posed to their health, seeing the hospital as failing to protect them, with infection being viewed as an indication of a lack of hygiene in hospitals (Hamour et al 2003).

2.5.7 Response to threat

It has been argued that appropriate responses to infection only occur when there is a perceived risk and when efficacy is expected (Jenner et al 2002). For example, hand hygiene is both necessary and achievable when balanced against the cost in terms of
time and adverse effects, such as damage to the skin. Jenner et al (2002) cite self-protection as a motivating factor even when the main organizational purpose is patient protection and infection reduction. Personal responsibility and attitudes are predictors of intention to practice hand hygiene, with behaviour, to some extent, being predicted by perceived behaviour, control and intent (Jenner et al 2002).

Faeces contain pathogens that cause disease and as such are a threat to public health (Curtis et al 2003). Hygiene behaviour is therefore a rational response to the threat. While this rational response to a disease threat underpins models of health belief and behaviour, Curtis et al (2003) sought to provide more meaningful explanations than many authors. They found that while carers were espousing rational medical explanations for their behaviour there were other reasons that played a significant part. These included removal of smells, a demonstration of caring, and to avoid disapproval from others. While for Curtis et al (2003) hand hygiene could be seen as a response to disease threat, in the context of home hygiene, behaviours may have very different meanings including nurturing and creating a desirable environment and may be driven more by concepts of cleanliness than any rational disease control explanation.

Twigg (2000) sees care work as work that involves dealing with human waste and requires the worker to deal with dirt and disgust. While it is evident that what societies consider dirty or disgusting varies, disgust generally stems from fear of contagion whether directly through oral contact, touch or through moral pollution (Douglas 1966, Miller 1997, Twigg 2000). According to Twigg (2000), the essence of disgust relates to other people and their dirt, rather than one’s own, re-iterating the feelings that other people’s dirt is dirtier than one’s own (Curtis and Biran 2001). Van Dongen’s (2001) study of care in an elderly psychiatric ward also identifies similar influencing factors with regard to the wearing of gloves. Here wearing of gloves not only reconfirms boundaries between self and other, but gloves are worn when the dirt involving faeces, vomit or sputum is considered worse than normal and evokes a feeling of disgust.

In Twigg’s (2000) study of care work for older people in their own homes other people’s bodies and their products were the main source of revulsion, which
according to Twigg, reinforces current thinking in the western paradigm. This attitude to dirt and body substances also extends to smell in the western paradigm, as smell particularly is seen to extend the person and is intrusive by crossing into others’ space (Twigg 2000). Smell cannot be contained or easily controlled and rather than seeing it as part of a person as some cultures do it is felt to be extending that person beyond what is acceptable. The majority of care workers in Twigg’s (2000) study wore gloves when washing and bathing patients. Although this was required by their employing agencies, who stated that the rationale was in terms of hygiene, for most care workers the gloves had a much more symbolic meaning. They represented a physical barrier to protect from the intimacy of bathing, whilst also providing a professional barrier. It was felt that touching someone with gloves on was far less intimate than skin-to-skin contact, but also that the gloves had a part to play in role identification. Gloves could be symbolically saying to the patient “you are contaminated” and hence care must be taken not to cause offence or misunderstanding (Twigg 2000). Care workers in both Twigg’s (2000) and Van Dongen’s (2001) study were aware of this connotation and some felt guilty about using them.

While a recognised threat can affect how people respond, this response may also be influenced by what is believed to be common knowledge. For Suk-Young Chew (2001) an “event or fact is common knowledge if everyone knows it, everyone knows that everyone knows it, everyone knows that everyone knows that everyone knows, and so on” (p9). People care about what others do and problems, what Suk-Young Chew (2001) terms co-ordination problems, will occur when someone wants to do something but only if everyone else is doing it. This of course has implications for healthcare and infection control behaviours specifically when something is common knowledge among a group whether it is rational or irrational. Common knowledge is not necessarily underpinned by rational scientific knowledge and is not always ‘common’ to all. Rituals also become common knowledge and in some ways remove any co-ordination problem; everybody knows that the ritual is being carried out and therefore is happy to carry it out. According to Suk-Young Chew “although few would say there is a clear distinction between the rational part and the irrational part of a human being, it seems obvious that there is a distinction between explanations based on rationality and explanations based on irrationality or nonrationality” (2001 p94). Nurses carrying out inappropriate infection control practices or not adhering to
recommended practice may be acting out behaviours they believe to be common knowledge, or may be carrying out ritualistic practice that has become embedded as common knowledge.

Behaviour, which is influenced by both rational and irrational thoughts, may therefore not be congruent with policy. Paradoxically, policies perceived as rational by government agencies may be adhered to even when the healthcare workers believe they are not effective or may be adapted to accommodate irrational fears. For example, Kennedy et al’s (2004) study of 215 nurses and care workers briefly discussed how some stated that they would adhere to policy restricting rings and long fingernails even when they didn’t believe either contributed to the risk of infection. Here the respondents not only had knowledge about infection control practices, which they did not necessarily put into practice, but also would agree to follow policy even when they felt the policy was not correct. While this was espoused behaviour reported in a survey rather than observed and the responses given may have been influenced by knowledge, beliefs and the desire to give the ‘correct ‘answer, what this demonstrates is that behaviour and responses are multifaceted with often conflicting factors. Any behaviour deemed inappropriate may require considerable examination and interpretation before the rationale behind it can be explained and warrants further investigation.

Conversely, an early ethnographic study by Wolfe (1986, 1988) sought to explain ritualistic practices in nursing and the explicit and implicit meanings that these rituals have for nurses. Wolfe (1988) found that nurses feared infection even when the scientific evidence for infection was not present and that they used gloves and hand washing for self protection. Furthermore nurses largely accepted the risk while worrying about transmission to their families. However Wolfe (1988) did not explain these rituals of hand washing and glove wearing further in terms of the basis for the rational and irrational thoughts, stating that rituals help reaffirm beliefs such as doing good although they have been espoused negatively as purposeless. Beliefs can be reaffirmed and the “sub cultural knowledge” (p67) passed on by word of mouth and demonstration. According to Wolfe (1988) rituals may fill the space, irrationally, where scientific rationale fails, however further studies are required to fully explain
this behaviour and it is the intention of the current study to examine this further and address this gap.

2.6 Influencing practice and changing behaviour

While education may be seen by some as the single most important factor in changing infection control practices, Naikoba and Hayward’s (2001) review of the literature identified that a single educational intervention only produces a short term improvement and that multifaceted interventions were much more likely to produce sustained compliance with hand hygiene practices. Educational programmes, information leaflets and performance feedback have been associated with the highest, although somewhat transient, improvement in hand hygiene compliance (Pittet 2000). Additionally no single intervention has been shown unequivocally to increase compliance, although the most effective strategy seems to be routine observation followed by feedback.

However, where healthcare workers are working against the rational model (Gershon et al 1995), their practice is not easily explained and education based on a rational model is unlikely to succeed, as it may fail to address, in any depth, irrational beliefs or thought processes. Influencing practice and changing behaviour is a complex process that involves a combination of system change, education and motivation (Pittet 2002). It has been recognised that the mutually dependent nature of contributing factors including the organizational culture and environment must be considered before any change can be sustained (Kretzer and Larson 1998). Hand hygiene compliance does not rely only on individual factors and neither does its promotion (Pittet 2002). Promotion of hygiene needs to be an organizational priority with active participation on all levels and a culture of safety needs to ensue. Considering all these factors presents a complex issue for NHS organizations, with no single solution addressing all facets. Accordingly, approaches to increasing hand hygiene compliance should not only be multimodal and multidisciplinary but should also consider various levels of behavioural interaction (Pittet 2002) and further explanations are required to provide the level of information needed to influence and change practice.
Pittet et al (2004), while examining physician’s hand hygiene, identified multiple predictors of adherence. Although compliance was primarily associated with knowledge, social pressure and the potential for being a role model were also influential. However, although role modelling can be influencing, negative role models can also be influential and poor practice is easily learnt (Pittet 2004). Conversely Seto (1995), basing his work on French and Raven (1959) asserts that for nurses the bases of power most likely to influence their compliance with infection control policies were informational; the persuasiveness of the information communicated, expert power and the attribution of superior knowledge or ability. This mirrors the earlier findings of the SENIC project (Raven and Haley 1982) where informational and expert power best explained the positive impact of infection control on the 7,046 surveyed nurses. Additionally, it has been reported that observation of infection control practices produces a Hawthorne effect with compliance rising, particularly in relation to hand hygiene (Pittet 2002). Pittet (2002) does however suggest a sustained and never ending Hawthorne effect may in fact be the answer if a cost effective way of inducing it could be found! The ‘cleanyourhands’ campaign to make infection control everybody’s business essentially provided constant observation to ultimately affect behaviour, however, what informs and influences this behaviour beyond observation is worthy of further investigation.

The opinions of others and how healthcare workers perceive others to view the importance of hand hygiene has been demonstrated as playing a role in hand hygiene compliance (Pessoa-Silva et al 2005). Furthermore Pessoa-Silva et al (2005) reiterated Pittet et al’s (2004) belief that the perception of being a role model to others was also associated with better compliance. Their study of 15 physicians and 65 nurses also showed that perception of risk and motivation showed a non-significant association with the intention to carry out hand hygiene with risk perception shown to be only a minor predictor in relation to intention to use gloves. They concluded that the positive opinion of those seen as senior or superior was positively associated with intention to perform hand hygiene as was the concept of role modelling.

In terms of media reporting of and the influence this may have, not only on healthcare workers but also the general population, Fielding et al (2005) found that reports that raising anxiety levels by disease warnings only produce transient, inconsistent and
ineffective results. According to Fielding et al (2005) the three main contributors to this are that risk is often underestimated; if little or no threat is perceived, fatalistic attitudes may be adopted; and over exposure causes familiarity and warnings are dismissed. While some studies have demonstrated how media reporting can raise public awareness (Brug et al 2004), others have highlighted how public information not aimed at high risk or risk-taking groups can lead to misinformation and increase public anxiety (Leung et al 2003). The media is, however, a powerful tool that government can use to their advantage when public safety is an issue although any use of the media should be appropriate and carefully managed.

2.7 Summary

The literature pertaining to infection control and the control of HCAI is extensive with significant work being carried out in specific areas. However, research considered thus far suggests that although methods of infection and infection transmission are now more clearly understood, actual prevention practices are below the required standard. While there has been some research into predicting infection control behaviours and the factors affecting compliance with recommended guidelines, so far there has been scant investigation into understanding and explaining behaviours outside these recommendations. For infection control practices to be fully and correctly implemented all factors that affect behaviour have to be considered and taken into account. Practicality and feasibility, infection control and specifically the transposition of bacteria are important issues in both the home and the clinical setting. The reduction of HCAI is of major concern to the health profession and if practices are to be improved more innovative ways of change management need to be adopted. Explaining current infection control behaviours and their representation within the wider society may be key to understanding why recommendations are not adhered to. What influences healthcare workers in the home and within society as a whole may also play a role in how they behave in the clinical environment, as may the representations that are accepted within that environment. This study provides a forum to discuss practice and the influences that affect behaviour and may ultimately inform approaches to changing practice. It asks questions that relate to participants perceptions of risk from infection both within the hospital and the home, the practices they carry out to avoid these risks and what influences their behaviours.
Chapter 3
Methods

3.1 Introduction
While there is a body of work describing infection control behaviours and factors affecting compliance with guidelines, there has been little investigation into understanding and explaining behaviours that occur in everyday practice. Understanding such behaviours may provide a key insight into the challenges of behaviour change. Consequently the main research question in this study is “How can nurses’ infection control behaviour be explained?”

Specifically the study aims to: examine and explain nurses’ stated infection control behaviours; gain an understanding of nurses’ perceptions of risk in relation to infection; explain the behaviours that nurses report that they adopt to reduce this risk; and construct a representation of what happens in practice.

Using an ethnographic approach, this interpretative qualitative study uses vignettes developed from reported practice to explore nurses’ perceptions of risk and contagion. Twenty semi-structured interviews were conducted with registered general nurses in three waves. Participants were recruited from a post qualification module which did not have infection control as its focus. Participants had all been qualified for over one year and were working in an acute hospital setting. In Wave 1 eight participants were interviewed using a topic guide (Table 2, p 59) developed from the literature. Participants were also asked to recall an incident from clinical practice where they had observed or had carried out infection control behaviours that they considered to be inappropriate. Following transcription of Wave 1 interviews, two vignettes were developed (see appendix 4) that represented observed practice. These vignettes were used with the topic guide to direct the six interviews in Wave 2. Wave 3 consisted of a further six interviews which were conducted in the same format as Wave 2 with slightly altered vignettes. Interviews were transcribed verbatim as soon as possible after the interviews and initial analysis was carried out before the next wave was commenced. All interviews were analysed as a whole using a framework method (Ritchie and Spencer 1994) once they were all completed. Furthermore participants were sent transcripts of their interviews for comment and an independent academic
reviewed all the transcripts and identified corresponding themes within them. Finally three participants were sent details of the emerging themes for comment and confirmation.

This chapter will explain the research methods in more detail and will provide further information on the development of the vignettes. Outlines of the design considerations, sample selection, process of data collection and data analysis will also be provided. It will also identify ethical considerations and the steps taken to increase the validity and credibility of the findings.

3.2 Methodological and design considerations

The design of the study required careful consideration to ensure that the aims of the study were met and that it gave insight into the phenomenon under investigation. Life is full of both observable and unobservable phenomena that are part of reality. If the priority is to construct a reality then all phenomena should be considered, whether subjective or objective. From this perspective, it appeared that an ethnographic approach would be the most suitable to achieve the study’s aims. Ethnography in its simplest form is an interpretative research methodology; this involves the participation of the researcher in people’s daily lives over an extended period of time. This includes watching, listening, questioning and collecting any other data in an attempt to explain the issues under examination (Hammersley & Atkinson 1995). This primarily produces qualitative data, although some quantitative data may also be gathered (Savage 2000).

From a nursing perspective, Savage’s (1995) work on nursing intimacy follows the classic ethnographic research approach of observation and interviewing. However while following these traditions, Savage did admit to feeling constrained by time, which has been identified as problematic in nursing ethnographies. While true ethnographic studies are conducted over a long period of time, nursing ethnographies tend to be mini-ethnographies (Kleinman 1992) or, as Savage (1995) argues, an ethnographic approach rather than ethnography or focused ethnography where there are established research questions and less emphasis on participant observation. This focusing of the research allows an approach that requires less fieldwork (Savage 2000). While each approach has its merits and drawbacks, it is important that the
approach taken is appropriate to the research aims, does not limit or constrain the study and is selected on applicability rather than any other criteria.

This work examines and attempts to explain nurses’ reports of their infection control behaviours, to gain an understanding of their perceptions of risk, and the behaviours they report adopting to reduce this risk, primarily in the work place but also in the home. The main foci are what stories they tell, their belief systems, and their opinions about infection control practices. Drawing on participants’ reported practice, it is hoped that a deeper understanding of what happens in practice can be constructed. While participant observations and interviews may provide one perspective on the reality of practice, it has been reported that observation of infection control practices produces a Hawthorne effect with compliance rising, particularly in relation to hand hygiene (Pittet 2002) and as such interviewing may be a more appropriate approach for this study than participant observation. Desjaralais (2003 p6) suggests that “spoken narration supports a phenomenological approach to sensory anthropology because the phenomenal and the discursive, life as lived and life as talked about, are like interwoven strands of a braided rope with each complexity involved in the other in time”. He insists that we can achieve understanding of other people’s experiences through their descriptions which is perhaps limited, but nonetheless valuable. However, while the value of written narratives and storytelling are recognised within social science research, so too is the value of vignettes and the critical incident technique (CIT) (Norman et al 1992) in examining specific incidents and behaviours. For the researcher, narratives can be problematic in that the researcher is often not present when the narratives are written and as such they need to ensure that the participant has clear information on the topic of interest (Streubert Speziale and Carpenter 2003). Both vignettes and CIT, combined with interviews, would allow the researcher not only to clarify the participant’s story but also to obtain other information that may have arisen from their interpretation. These three methods were considered and examined in detail, before a combination of a semi-structured interview with vignettes developed from incident reports was selected for this study.

3.2.1 Critical Incident Technique or Vignettes

The Critical Incident Technique (CIT) was first discussed by Flanagan (1954) as a method allowing the collection of direct observations of human behaviour in order to
develop explanations. This technique has since been developed as an investigative tool in both organizational analysis and interpretative research (Norman et al 1992, Chell 2004). Using this method, a factual incident that has a distinct impact is focused on, and while it can be either negative or positive, it must make a contribution to the area of interest. The benefits may be that feelings and meanings not previously explored in relation to the event can be clarified (Norman et al 1992). Those observers that are familiar with the activity, and can discuss first hand observations, are the most useful participants (Flanagan 1954).

Using Flanagan’s five stages of CIT to elicit indicators of high and low quality nursing Norman et al (1992) started with the general aim of setting plans and specifications and selecting participants who were in a position to recall the activities under examination. Norman et al (1992) see this “vague accounting” (p11) as useful, in that the CIT ‘incident’ may become a combination of a number of incidents that are similar and in effect become more of an ideal description with its own relevance. The work by Norman et al did however cause controversy; by making comparisons with other papers and studies they were accused by Grant (1993) of misinterpreting her work and of confusing the CIT with other research methods by straying from Flanagan’s original structure. Norman and Redfern (1993) defended the research approach, stating that as the research developed it became evident that CIT was not perhaps the most appropriate method as they required a more fluid and less rigid account of the phenomena under investigation. Similarly for a study examining infection control behaviour, the reported behaviour may not be rigid and variation may occur between participants. In order to gain a more rounded and inclusive picture of the phenomena it may be that vignettes or brief descriptions of a number of events presented to participants to comment on will provide a varied and realistic representation of the behaviours under investigation.

Vignettes whether fictitious or factual can be structured to allow participants to demonstrate their perceptions and knowledge about the activity under investigation and can be a valuable tool, either alone or in conjunction with other methods when studying attitudes, perceptions and beliefs (Hughes and Huby 2002). In addition, where resources restrict the research, vignettes can provide considerable data relatively cost effectively. For example, a true ethnographic study of a clinical area,
observing practice and asking the ward team to comment on practice, may constitute years of work and would be beyond the scope of this project. However, vignettes could record infection control behaviours witnessed by participants in clinical practice thus drawing on many years of clinical experience. Consequently the vignettes would be firmly grounded in reality and represent everyday events.

Sumrall and West (1998) deem that vignettes should be based on real life events particularly when trying to detect distinctions that only so called ‘insiders’ are aware of. In addition any threat or potential harm to the participant from disclosing sensitive information is reduced as participants can respond either from their own perspective or from the perspective of the character in the vignette (Hughes and Huby 2002). According to Hughes and Huby (2002), asking participants to respond in the third person can reduce distrust of researchers and also reduce socially desirable responses. Being able to say someone else does this, or indeed the vignette character is doing this, but I do not, reduces the biasing effect and is an important consideration where participants are asked to report their own practice. Taking on the role of the vignette character provides a distancing effect allowing the participant to respond within the context of the situation (Hughes and Huby 2002). However, while this distancing has acknowledged benefits (Hughes and Huby 2002) it must still be recognised that participants are commenting on practice rather than practice actually being observed and reported practice does not always constitute what happens in practice (Jenner et al 2006). Hughes and Huby (2002) have however highlighted limitations of the use of vignettes particularly in relation to situations where the participants could not imagine themselves in the vignettes character’s role or where not cognitively able to understand the vignette. Nevertheless, using vignettes taken directly from practice may negate this by describing events that participants will either have carried out, observed, or could at least visualize.

3.2.2 Gathering information by interviewing

Interviewing is essentially a conversation (Oakley 1981) that is also a significant method of data collection as it allows the researcher to put observed behaviour into context (Fetterman 1989). Interviewing techniques adopt a broad spectrum of structure and control, from unstructured, as in phenomenology, to rigid closed question answers in quantitative research. Interviewing in this study was intended to
allow the participant to recall their own narratives; a semi structured interview format allowed the participant to be guided into discussing their own practice and practice they had seen. In this way the interviews would allow in-depth discussion of their own fear of contagion and perceptions of risk, any inappropriate behaviour they had witnessed, how far policy influenced behaviour and how they controlled infection in their own home.

3.2.3 Study design and chosen methods
After careful consideration an ethnographic type approach to this interpretative qualitative study was used. The chosen method of data collection was semi structured interviews using both a topic guide and vignettes developed from participants’ descriptions of practice. These methods allow participants’ stories and beliefs to emerge and give an insight into their account of reality and the picture they draw of that reality. The participant, in effect, becomes the participant observer, a role to which they are eminently suited, as they have observed and acquired knowledge from the social world. For the ethnographer these observations are an important source of information and data (Bernard 2000).

3.3 Accessing data and selecting the sample
The study required a cross section of qualified nurses who were practicing in hospital based clinical settings and were in a position to observe and comment on practice. Identifying participants and recruiting can be problematic when a variety of settings are considered appropriate; using more than one clinical area can also be complex and delay ethical approval. However a programme of post qualification study could provide suitable participants and the researcher was in a position to approach and recruit from this source.

3.3.1 Participant identification and engagement
Trained nurses undertaking a general mentorship module were selected as they were in a position not only to observe practice but also to influence it. The mentorship module runs three times a year at the Florence Nightingale School of Nursing and Midwifery with an average intake of 300 students in each of the 3 terms. Nurses who have been qualified for a minimum of one year are recruited across South East London. The module attracts nurses from a variety of clinical settings that may not
otherwise pursue further education, thus capturing a broad range of participants. In addition, students on this module have a vested interest in mentoring, which is often a requirement for career progression, but would not necessarily have infection control at the forefront of their thinking.

3.3.2 Sample selection and size
Unlike quantitative research, qualitative research tends to focus on a small sample size that can be studied in depth, with the sample tending to be purposeful rather than random (Morse 1991). The sample in this study is both purposive and convenient. Clearly all registered nurses who had observed infection control behaviours could not be included, so a convenience sample that was likely to provide rich data was selected.

In determining the sample size in qualitative research it is essential that sufficient data is collected to allow for deep understanding of the experience. Sandelowski (1995a) warns that between 10-50 descriptions of an experience may be necessary if the intention is to describe an invariant or essential feature of the experience and allow for a ‘new and richly textured understanding’. This study aimed to recruit up to 30 participants in total, approximately ten per wave, however it was recognised that recruitment might be difficult due to participants’ time constraints and that sufficient data to allow for meaningful thematic analyses and saturation, as described by Morse (1994), may be achieved with fewer respondents. According to Morse (1994) saturation is achieved when there is repetition of the data and no new themes or essences are emerging, new participants simply confirming findings rather than adding new information. This is the point where the researcher confidently believes that saturation has occurred while acknowledging that perhaps new data would be revealed if another group of participants were considered at a different time. The inclusion criteria specified only that participants needed to be working in an acute clinical setting as it was felt that those working in the community may not have observed the practices under discussion or that the perspective would be altered in a non-clinical setting.
3.3.3 Ethical implications

Ethical approval was sought and granted from the College Research Ethics Committee (CREC) without need for modification to the proposed research design (see appendix 1). Clear statements relating to participant anonymity and the consent process, the right not to participate and the secure storage of data, were given to potential participants. The participant information sheet set out clearly the nature of the study and stated that the participants were under no obligation to participate and would be free to withdraw at any time from the research. Participants were all required to sign a consent form and to verbally verify that they had read the information sheet and that they understood not only the nature of the study but that they were not obliged to participate (see appendix 2&3). While one can never be truly sure of how people are feeling it was important to ensure that the participants did not feel coerced into joining the study and that they understood that their decision to participate would have no influence on their studies at the College.

Additionally, while it was not anticipated that any disclosure of professional misconduct would arise during the interviews, should this occur, the researcher (as a nurse) was bound by the Nursing and Midwifery Council Code of Professional Conduct (NMC 2004a) to act on the information should misconduct be disclosed. The information sheet stated this and the participants were reminded of this at the start of the interview.

3.3.4 Recruitment

Potential participants attended College for a total of six days over a 12 week period. Students were divided into study groups of 20-30 for the mentorship module and two groups were approached each term on the second day of the course. A 10 minute presentation on the study was given, outlining its background and planned methods. Participants were given an information sheet and contact details for the researcher and were assured that interviews would be scheduled at their convenience. It was made clear to the participants that the researcher had no links to the module that they were studying, nor their own clinical area and that they need not participate if they did not wish to do so.
3.4 Conducting the research and collecting the data
As anticipated the data collection took just over one year with the first interviews being conducted in January 2007. Thirty nurses expressed an interest in the study and 20 were interviewed over the 14 month period in the 3 waves. Participants were interviewed individually. Three participants simply forgot to attend and were rescheduled, while some sickness resulted in non attendance at college on the planned day and the interview. One potential participant suffered a major illness and another’s family incident prevented participation. Age, gender, length of service, ethnic identity, qualification status and area of work were recorded. Pseudonyms, which corresponded to participants’ gender but did not identify them in any way, were used to maintain anonymity (Table 1).

Participants’ ages ranged from 24-53 years with 40%, the largest group, being between 24 and 29 years old. Thirteen women and seven men were interviewed. Level of education was 60% Diploma, 30% Degree and 10% Postgraduate. Years of experience ranged from 1½ to 20. Only one participant did not give information regarding years of experience, however all other information was collected.
## WAVE 1

<table>
<thead>
<tr>
<th>Pseudonym</th>
<th>Age</th>
<th>Highest qualification</th>
<th>Level of study</th>
<th>Years of experience</th>
<th>Areas of experience</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 Alan *</td>
<td>26</td>
<td>Diploma</td>
<td>Degree</td>
<td>2</td>
<td>Adult</td>
</tr>
<tr>
<td>2 Betty *</td>
<td>26</td>
<td>Degree</td>
<td>Degree</td>
<td>5</td>
<td>Adult</td>
</tr>
<tr>
<td>3 Carol *</td>
<td>37</td>
<td>Degree</td>
<td>Degree</td>
<td>13</td>
<td>Adult</td>
</tr>
<tr>
<td>4 Diane</td>
<td>48</td>
<td>Diploma</td>
<td>Diploma</td>
<td>2</td>
<td>Adult</td>
</tr>
<tr>
<td>5 Eric</td>
<td>33</td>
<td>Degree</td>
<td>Diploma</td>
<td>6</td>
<td>Adult</td>
</tr>
<tr>
<td>6 Francesca</td>
<td>25</td>
<td>Diploma</td>
<td>Degree</td>
<td>3½</td>
<td>Adult/Children/Mental Health</td>
</tr>
<tr>
<td>7 Geoffrey</td>
<td>43</td>
<td>Diploma</td>
<td>Degree</td>
<td>1½</td>
<td>Adult</td>
</tr>
<tr>
<td>8 Helen</td>
<td>30</td>
<td>Diploma</td>
<td>Degree</td>
<td>3½</td>
<td>Adult/ Midwifery</td>
</tr>
</tbody>
</table>

### Table 1. Participants' pseudonyms and details. *Pilot interview
3.4.1 Data Collection

Data was collected in three distinct waves.

**Wave 1, eight interviews**

Wave 1 consisted of exploratory audio recorded individual interviews where participants were asked to identify a critical incident or an observed practice in the clinical setting which demonstrated one of the following events:

- When the participant witnessed an occasion/situation where infection control precautions should have been carried out, but were not.
- When the participant witnessed an occasion/or situation where infection control precautions were carried out, or protective clothing was worn, when they were considered not to be needed.
- When the participant should have carried out infection control procedures themselves but failed to and the reasons for this omission.
- When the participant felt the need to wear protective clothing despite no obvious need and the reasons for this.

Wave 1 interviews also included a semi structured discussion using a topic guide (Table 2). Each interview covered all topics on the guide in varying amounts of depth. All participants in Wave 1 were able to discuss all these topics.
Safety in practice
Contact with a patient who does not have a confirmed infection
Contact with a patient who has an identified infection
Perceptions of infection risk and contagion from patients
Cleanliness of hospital e.g. staff toilet, patients toilets

Family and friends
Concerns about passing infections on to family and friends and precautions taken to prevent this
Concerns of family and friends regarding infection control and information given
Teaching infection control practices within the home
Precautions taken at home, e.g. gloves, aprons
Cleaning practices within the home

Policy
Influence of policies on practice
Appropriateness of policies e.g. tasks where gloves are advised but impractical to use
Practices seen that do not fit with the infection control policy or are not part of what the participant considers to be the infection control policy

Table 2. Topic guide used for interviews

Wave 2, six interviews
From the data collected at Wave 1 and the initial data analysis, vignettes of practice were developed for discussion with participants in Wave 2, in conjunction with the same semi structured interview as Wave 1. Taking actual incidents described by the Wave 1 participants, particularly those that more than one participant described (Norman et al 1992, Hughes and Huby 2002), two vignettes were developed which described infection control related behaviours in a ward setting (see appendix 4). For example the two excerpts below, taken from the interviews in Wave 1, helped formulate one of the activities in vignette 1:

“They had done the blood pressures for all the bay... one apron ... gloves, no cleaning in between and they took everything off as they exited the bay” Alan, Adult nurse, 2 years experience.
“The other thing is people wandering round wearing gloves and aprons and they’re supposed to change between patients and you see a nurse and they actually don’t. I have seen nurses wash patients as well with gloves on …that to me is awful, because to me that says that you’re not clean, so I would imagine that some of the patients feel that way. I’ve never had a patient complain to me about a nurse not wearing gloves”

Carol, Adult Nurse, 13 years experience.

Thus Vignette 1 was formed developed from a combination of these reported incidents:

“In the next bay a nurse is recording the blood pressures of all the patients. She is wearing gloves and an apron, which she keeps on for all eight patients. One patient is having a bed bath; her nurse is wearing gloves and an apron to wash her.”

Wave 3, six interviews
Although Wave 3 was originally designed to only include a more focused discussion around previously identified themes and the explanations that arose from the vignettes, as Wave 2 of the research progressed, it became apparent that discussions around the vignettes were producing rich and interesting explanations of behaviour and perceptions of risk and threat, and that this warranted further investigation. Therefore Wave 3 included the same discussions as Wave 2, although the vignettes were changed slightly to focus the discussion. For example all participants identified that doctors behaved differently and commented on this. While this was interesting it did not shed any light on the participants’ own behaviour or that of other nurses; consequently the description of doctors’ behaviour was removed from the vignette used in Wave 3 (see appendix 5).

3.4.2 Conducting the interviews
The first three interviews of Wave 1, and the first interview of Wave 2, acted as a pilot to test the data collection methods. The initial plan for the interviews was that at Wave 1 the participant would be asked to recall an incident from practice; however it was apparent even before the first interview that if the participant could not recollect an incident then no data would be forthcoming. For this reason the interviews started with the topic guide questions which provided data and allowed incidents to emerge
over the course of the interview. The pilot interviews did not identify any necessary modifications to the proposed design and the data was included in the final analysis. However, recruitment was a difficult process as the mentorship students were only in college for one day every fortnight. A protocol modification was submitted and approved by the ethics committee allowing the researcher to also recruit via e-mail.

The interviews, which were scheduled for 30 minutes each, took place in a private office within the college. The audio recorder was a small unobtrusive machine that did not seem to hinder or intimidate the participants and was of excellent quality. Some notes were taken during the interview to recorded facial expressions and non verbal signs of communication.

No interviews were abandoned, although one interview was disturbed by a telephone that had been overlooked. One was also disturbed by someone entering the room, even though a large “Do not disturb notice” had been placed on the door; otherwise all interviews were carried out without incident. Most lasted just over 30 minutes with the longest being 44 minutes.

In total 20 interviews were conducted, at which stage participants were confirming what others had said, no new information or themes seemed to be emerging and it was felt that saturation (Morse 1989) had been achieved.

3.5 Analysing qualitative data and the use of frameworks
The interviews were all transcribed verbatim by the same individual transcriber in order to reduce the mistakes which according to Poland (1999) can easily be made. To further reduce this risk, interviews were transcribed in batches of 3-4 and each transcription was checked, rechecked and corrected by the researcher. Although only minimal mistakes occurred they had the potential to alter the analysis and thus the interpretation and so required correction. All interviews from each wave were transcribed before the next wave commenced. Once the tapes were transcribed, main themes and patterns of behaviour were identified and comparisons made with existing literature (Spradley 1979). Preliminary data analysis started immediately and was essential for the research to progress as the vignettes were developed from the first wave.
3.5.1 Basic principles during data analysis

Frameworks can be helpful in terms of organising the data initially (Sandelowski 1995b), but for true inductive analysis and interpretation any framework must be data derived and be utilized because of its fit with the data. According to Sandelowski (1995b) data analysis is a process that starts with the preparation of the data, for example the transcription of interviews and proofing, each transcript being checked against the audio recording. At this stage some preliminary analysis will occur and initial thoughts and ideas are recorded. In the next stage of data analysis the focus is on gaining a sense of each interview through immersion in the data. This immersion can be lengthy but is essential before comparisons are made and data interpretation occurs. For Sandelowski (1995b) hasty completion of the analysis process is the most common error made when analysing qualitative data, the process should not be rushed and researchers should be cautious only moving on when they are ready. At this stage a brief abstract or summary of distinctive elements may be formulated before moving to the final stage of extracting facts, story lines and content (Sandelowski 1995b).

Key principles are also helpful when analysing any data of a descriptive nature. As with previous work (Jackson 2005a, 2005b), once the transcription was completed some basic ground rules developed by Powers and Knapp (1990) were adhered to throughout the analysis:

- Throughout the data analysis reflection would be a constant occurrence.
- The data collected would be a written transcript of the participant’s own experience, and the researcher would become familiar with the data by reading and rereading.
- The transcripts would be reviewed by the participants to ensure they presented a true representation of the interview.
- Any interpretation commenced during the interview would be continued and expanded through analysis.
- Themes and clusters would be identified and recorded. Common themes and clusters would then be compared with existing literature following an extensive search considering the most consistent themes.
- Themes and clusters would be checked with participants and a fellow researcher to provide validity.
The interviews provided a vast amount of data that needed to be organised, coded and analysed. Numerous techniques can be adopted for this analysis, although there is general agreement that coding is cyclical (Lincoln and Guba 1985, Miles and Huberman 1994), with codes being revisited and revised throughout the data analysis process. Some codes may become obsolete or may be incorporated into other codes. Equally throughout the process new codes may emerge and give rise to previously hidden interpretations, which can provide the researcher with new and interesting insights. Lincoln and Guba (1985) described the cyclic coding procedures as filling in, extension, bridging and surfacing, which continue until categories are saturated and easily recognisable regularities occur. This concurs with Miles and Huberman (1994) who also discuss the occurrence of recognizable regularities.

Preliminary coding actually required little interpretation and occurred at the start of the analysis. At this stage the text was allocated to a particular phenomenon or broad code that required further interpretation in order to extract meaning. From deeper analysis of each broad code patterns emerged and themes and links were identified. New and emerging components were then allocated a separate code. These different levels of analysis occurred throughout the process. As the interviews were semi structured a list of codes was prepared fairly easily prior to the data collection as suggested by Miles and Huberman (1994). The interview questions fell into four categories or master codes drawn from the literature: 1) observed infection control practices; 2) own perceptions and approaches to infection control; 3) family and home; and 4) environment. Sub codes were then identified within each master code, for example ‘perception of risk to self’ emerged as a component within ‘own perceptions and approaches to infection control’.

While software can be useful for data storage and retrieval and initially NVivo 7 was used, the software did not reduce the amount of work as no software can draw meaning and context from the literature (St John and Johnson 2000). In this instance it was felt that deeper immersion in the data could be achieved by identifying and coding by hand. Although a lengthy and complex process, provisional codes were identified and segments that fitted these codes were physically moved to give an idea of frequency (Strauss and Corbin 1990). Colour was also assigned to each code to give an immediate visual sense of what was occurring.
These methods, which were followed for the initial coding of the data, were useful in terms of managing the data and directing thinking. However the process was also constricting and failure to engage in creative and insightful thinking would have resulted in very unimaginative linear results which did not provide a true representation of what the data were saying. There were a number of threads running through the codes which, as the analysis continued, emerged as constant themes, giving true voice to the data. In order to overcome a restrictive feeling and in keeping with the ideas of Sandelowski (1995a) that any framework adopted at such an early stage should be used only to allow the researcher to arrange the data in manageable sections, a more open minded approach was taken by adopting the framework described by Ritchie and Spencer (1994) once initial coding had been carried out. The foremost question at this stage was ‘what is this data actually saying?’ rather than which category or code it fitted into. This framework involved distinct yet interrelated steps, consisting of familiarization, identifying a thematic framework, indexing, charting and mapping and interpretation. While the framework perhaps had a logical order, due to the nature of the data it was necessary to step backwards and forwards throughout the process. The starting point was familiarization, where as the name suggests, the data became familiar by immersion in order to gain an overview of its richness and diversity. Following this familiarization, where some initial emerging issues and themes were recorded, a thematic framework was identified that allowed data to be organized, drawing on the interview topic guide, emerging themes and any recurrence or patterning that emerged. The framework was then applied to the textual data, in this case verbatim transcripts of the interviews, a process known as indexing. This process did however require more than simply applying an index to the margin of the text; decisions were made about the meaning of the text and the magnitude of what was being said. The final stage was mapping and interpretation where the data was considered as a whole. During this process the range and nature of the phenomena was mapped, concepts were defined, typologies were created and associations were found between themes. This process was also influenced by the objectives of the research; the main focus of this interpretation was to provide explanations, although other elements of the process enhanced the findings and added insight.
With the adoption of the framework and once full immersion of the data was achieved, the themes consistently emerged and gave a much clearer picture of the behaviours that were reported to be occurring and some of the rationales for these. All interviews were revisited and underwent the same rigour provided by the framework (Ritchie and Spencer 1994). (See appendix 6 for an exemplar of an interview transcript, appendix 7 for charting of a participant’s responses and appendix 8 for mapping across a theme).

Following this process three main themes were identified: ‘The classifications of dirt’ ‘Rationalizing dirt related behaviours’ and ‘Transitions in place and role’.

3.6 Audit trail and checking
There is increasing debate over how findings arising from qualitative research should be evaluated (Denzin and Lincoln 1998, Jackson 2003) although there is some agreement that they should at least be distinct from the criteria of quantitative research (Lincoln and Guba 1985, Hammersley 1992). Within social research there may be doubt over the validity and reliability of the work. Additionally in health and nursing the question ‘can we be sure that all will respond in the same way?’ arises. Lincoln and Guba (1985) argue that the crucial test for their accounts is whether the actors being described recognise the validity of these accounts, this is known as ‘member checking’. While member checking with actors can allow the researcher to modify and increase the plausibility of the possible interpretations of their data, as participants may have additional information and knowledge, it should be recognised that such information may be false (Jackson 2005a). Nietzsche claims that perspectives are only a construction from that individual and it depends on ‘a priori’ knowledge whether one can see truth in that construction (cited Russell 1961). Hammersley and Atkinson (1995) warn against taking this additional information as direct validation and see it as additional data and a source of insight.

In order to carry out member checking in the current study, copies of the transcripts were sent to all the participants asking them to comment of the accurateness of them, correct them as required and provide further explanation if they felt that was appropriate. Additionally Wave 3 participants were also sent the themes that had
emerged from the interviews and asked to validate and confirm them although comments back were generally about their own language rather than content.

Furthermore validation occurred from participants in waves two and three as they were able to recognise the actors and behaviours in the vignettes. During the interviews participants readily confirmed that they recognised the behaviours and generally had witnessed the same or similar events. From the transcripts and identified themes no negative responses or discrepancies with the content of the interviews were received from the participants. One participant from Wave 1 wanted to discuss the research further and a follow up discussion confirmed the main themes with particular agreement on the concept of known and unknown dirt.

In addition to this form of member checking, a second academic reviewed the transcripts and drew their own themes which corresponded in general with those identified in the data analysis process. Furthermore they offered their own opinion and support of the initially identified themes, giving further credibility.

Finally in terms of validity Lincoln and Guba (1985) suggest the use of an audit trail to facilitate confirmability. This research documents findings through the use of audio-taping and transcription which are readily available. Although all transcripts are not included in this work any quotes or vignettes used in the discussion chapter to demonstrate the themes are referenced with participant pseudonym, page number and line of interview, for example, Betty (7.3) refers to participant Betty, page 7, line 3 of the interview. The vignettes used for the interviews are included in the appendix and clearly state which participant’s interview the vignette was formed from. Additionally data analysis and interpretation have been clearly documented and are available for audit.

3.7 Summary
In summary an ethnographic type approach was adopted allowing participants’ stories and beliefs to emerge. Twenty semi structured interviews were conducted with a cross section of trained nurses who did not have a vested interest in infection control but who through their mentorship role could influence practice. The interviews were guided by a topic guide, developed following an extensive literature search, and
vignettes developed from participants’ descriptions of practice. The interviews were transcribed verbatim and analysed using the framework method. The three main themes and eight components that emerged from the data are presented in Chapter 4 and discussed in Chapter 5.
Chapter 4
Findings

4.1 Introduction
This study’s primary aim was to understand and explain nurses’ reported infection control behaviours. Three main themes were identified from the data analysis. Each of the identified themes is presented separately and a summary of the main findings is provided. The first theme, “The classifications of dirt”, consists of three component parts: “What is dirt and how do nurses deal with it?”, “The known, the unknown and the familiar”; and “Faeces as an age related threat”. The second theme, “Rationalizing dirt-related behaviour”, also consists of three component parts: “Rationalizing and rationalizing the irrational”; “Rationalizing or condemning irrational behaviour in others”; and “The display of practice, is it all a show?”. Finally the third theme “Transitions in place and role” consists of two components: “Where is the dirt” and “Transition in place; practice and rituals”.

Dirt was classified by participants in the first theme and explanations were given throughout the interviews as to how this dirt would be dealt with in both the home and the hospital setting. In the second theme participants interpreted their own behaviours as rational; any behaviour that had the potential to be considered inappropriate in their own practice was rationalized. The status of dirt in relation to its environment emerged as a significant factor in explaining behaviour in both the second and third themes. Throughout, dirt was discussed in terms of risk, and through this the concept of known and unknown dirt and attached risk emerged. Furthermore behaviour was rationalized in self but not in others with place and context of contact with dirt being an important driver in behaviour. Participants discussed their own behaviour and that of healthcare workers involved in the same caring practices as themselves in the context of dirt.

While each of the three themes and their component parts are discussed individually, they are inextricably linked, supporting and complementing each other. There is a constant thread throughout the themes that revolves around dirt and contact with it.
4.2 The classifications of dirt
This first theme will begin to explain the behaviours under examination. However before any explanation of behaviour can begin, the nature of dirt, responsible for the behaviour, needs to be defined. A significant finding of this study was that all patients were generally perceived as dirty and, as such, participants needed protection from this dirt. “Dirty” was not equated with infection and it seemed clear that perceptions of “dirt” influenced “infection” control behaviours quite powerfully. Many of the behaviours discussed and observed were better understood as a socially mediated response to dirt than as “scientific” infection control.

Participants reported making informal assessments of patients’ level of cleanliness when they first encountered them and of treating everyone as unclean until they became known. There was a clear difference between those patients nurses reported to know and those they did not know; participants also talked about familiar germs and known practices as being less risky to them. Family and friend were considered clean although patients could also achieve this state of cleanliness once they became known. All dirt was reported to be threatening, with faeces being the most threatening form of dirt. All faeces were considered dirty, however the threat was also age related, with adult faeces being seen as potentially more threatening than children’s.

4.2.1 What is dirt and how do nurses deal with it?
In this first component all participants identified that contact with patients could involve contact with infection and dirt. A clear distinction was made between that which was infected and that which was dirty. Infection had tightly defined boundaries, whereas what constituted dirt was more fluid. Participants all identified that infection could be clearly defined, named microbiologically and treated as a separate entity from something that was dirty. The two did not necessarily equate; infection did not mean dirty and vice versa. Infection could be clearly identified, labelled and treated, whereas dirt could compose of germs, bacteria and waste products but not necessarily any identified infection. At times terminology became confused, however it seems that germs and bacteria were considered as dirty and unclean, but not necessarily “infectious” until identified as such. Participants were discussing dirt not infection. Body debris, such as old skin cells or any water that had been used for washing and was contaminated by body debris, was considered dirty and unclean. For example
Olivia discussed how towels, which were dirty because they have been used, would not be considered infectious:

“But it’s not, it wouldn’t be infectious, but I would see it as being dirty because it’s personal– the person has used it to clean her body or his body, and we use towels for all parts of our body!” Olivia, 3 years experience (7, 3).

The towel now contained body debris which is deemed unclean; although not a risk in terms of infection as infection had not been identified. Similarly, when asked about infection and the difference between it and dirt, Melanie saw that dirt did not carry the same threat as infection, but was unclean and as such distasteful and to be avoided:

“Not a threat, just not clean. I don’t see much as a threat to be fair unless it’s, you know, and yes I don’t view much as a threat. I do see it [dirt] as unclean” Melanie, 2 years experience (12.19).

Skin was also seen as being unclean as it had dirt, germs and bacteria on it as demonstrated in the following excerpt:

“but on the skin itself there’s a lot of dirt, there’s a lot of germs, or bacteria or whatever it is, living on the skin anyhow. And I always say that” Roger, experience unknown (4.47).

If there was any suspicion of dirt or body fluids “out of place” then precautions were needed. In a newly admitted, undiagnosed patient, protective behaviour could be adopted on the grounds that infection had not been ruled out; behaviour which ultimately met the participants’ need to be protected from dirt, for example:

“Especially, I think in A & E, I think you get the perception of, you don’t know what this patient’s got, you’ve got no diagnosis, you’ve got no, nothing to compare, so you do feel a lot like, ‘Oh I don’t know, so I’d better wash my hands.’” Melanie, 2 years experience (7.14).

“You don’t know what you’re dealing with, so you have to be careful and protect [yourself]” Peter, 13 years experience (16.2).

There was however some comfort for one participant who reported that he treated everyone as infected until proven otherwise; this gave him the protection he needed from everything including dirt or anything he might suspect he would come in contact with:
“Where I am [high dependency/clinical practice], you treat everyone as infected anyway” Kenneth, 10½ years experience (3.13).

Although giving the impression that all patients were potentially dangerous or a threat, Kenneth also worked in more general areas and in a different setting he acknowledged that his assessment might be different:

“Again, the other area I work, it’s one to one, so sometimes you’ll put your gloves on, but it depends what you’re doing, again. I mean I won’t go to every patient with gloves and apron because it makes them feel like they are dirty when they are not” Kenneth, 10½ years experience (3.18).

That all patients were initially viewed as dirty was a recurring theme. For example one participant described Accident and Emergency patients as riff raff who were not clean “but the riff raff you kind of get in the A & E department” Melanie, 2 years experience (4.50) and although nobody else used such a derogatory term there was a clear sense that patients and indeed the general public were not clean.

For all patient interactions it was clear that participants felt the need to protect themselves with protective clothing if they were likely to be in contact with the patient. Certain body areas were also perceived as being more problematic than others, for example fingers, toes and genitalia, as seen in this exert where Roger discussed how a nurse who has spotted dirt may behave:

“and if she[the nurse] is looking at places like that, because if she has spotted lots of dirt between the toes, you know, or fingers and things like that......putting on the gloves would actually help because the bacteria that lives in the anal area is completely different from other parts of the body” Roger, experience unknown (5.38).

Participants were worried that patients may have touched certain forms of dirt and this could be transferred to the nurse. While participants did not specifically identify this as an infection risk they indicated that any unexpected contact with dirt should be avoided, meaning that precautions should be taken when suspicion arose:

“I don’t know really. I mean if they – if a patient had come out and gone and touched the wound or had faeces on his hand. And, you know, you can see it and he came up and hugged you, then that, then it’s a more obvious threat to you, I suppose” Jean, 2 years experience (5.44).
"I also, interestingly, work with the substance misuse – so, erm, even within my semi clinical environment I’m very conscious that it’s appropriate for me to shake people’s hands, which I do. However, I wonder where the hands have been! Absolutely” Steven, 14 years experience (5.15).

They were also concerned that they could come across any form of dirt throughout the course of their work; some reported behaviour appeared to have been learnt and continued regardless of actual risk. Jean discussed how early in her career another nurse had taught her to always wear gloves as a precaution, especially when contact with faeces was a possibility:

“And she always said ‘Oh I do this [wear gloves] in case I reach into the bed and find something nasty”, Jean, 2 years experience (1.24).

Faeces seemed to pose the biggest threat to all participants; Steven gave a vivid narrative of an incident that had happened some years earlier:

“it’s something that a ward sister that I worked with in mental health many years ago was sorting out – and it was a long stay ward – sorting out somebody and obviously didn’t use gloves when they were cleaning the faeces – she was in her car at the end of her shift and she thought she had a bit of dry coffee on her. And she licked it!” Steven, 14 years experience (13.18).

While an extreme example of contact with faeces, this incident had stayed with the participant for many years and affected how he perceived dirt and faeces. He openly acknowledged that he feared the consequences of any contact with faeces:

“The fear of what you might find or what might happen as a consequence afterwards. But, it does make you feel quite unwell at that particular time, [when contact occurs]” Steven, 14 years experience (13.37).

Washing a patient was an activity that involved direct contact with patients, and was commonly identified as a procedure where protection from dirt was needed. Generally it was reported that uniforms needed protection from anything that might splash onto them, whereas the need to protect the nurses’ hands was dependant on whether the procedure was considered dirty or not, and whether there was a risk of contact with dirt, germs or bacteria. Water that patients had washed in was considered dirty as washing was the process of removing dirt, and if hands were not protected dirt would be transferred to them. Although some participants felt that gloves were only
necessary for washing patients when there was a potential for contact with high risk
body areas, the constant themes arising were the preconceived idea of how dirty the
task was likely to be and value judgements about the patient’s level of cleanliness.
Again, the focus of these activities was protecting self from patients; there was no
consideration given at this stage to the patient’s need of protection from nurses or
cross infection from other patients.

When discussing the actor in vignette 2 who was wearing gloves to wash a patient, the
question that arose for the participants was whether the patient was clean or not as this
would affect behaviour, for example:

“One patient is having a bath and the nurse is wearing gloves and apron to wash her.
That again depends on whether the patient is clean or not” Peter, 13 years experience
(11.4).

Despite the overriding view that all patients were dirty, some, after an informal
assessment, could be attributed with hygienic practices, which meant that they were
judged as not as dirty and could be treated less cautiously than those who were
deemed dirty. Participants made an informal assessment of the level of cleanliness
and nature of the contact as a strategy to avoid dirt:

“No, not if it was just arms. I think if I know it’s just a clean, hygienic patient, that’s
fine. So it’s just a normal morning wash of somebody who’s just normal and who
cannot do his daily activities then I would assist in that and not even putting on the
gloves” Roger, experience unknown (6.6).

While a decision was reported to be made based on the perceived or assessed level of
cleanliness, the decision regarding the need to protect self was also influenced by
whether the actual intervention was considered dirty. If anything was seen as a dirty
process then protection was needed, although if the patient was considered ‘clean’ it
was not. Tanya talked about the nature of washing a patient and the concept of
whether this was dirty or not:

“But then again I suppose it’s what your concept of giving someone a bath is, is that
dirty … washing someone, if you think it’s dirty, then that’s why you put the gloves on
from start to finish. I can’t see why you need gloves to wash someone’s face or
someone’s arms or, you know” Tanya, 2 years experience (8.3).
“I don’t know if it’s a threat, but I suppose if you have a preconceived idea that this is a process that’s dirty, then you want to protect yourself whether you can get infected or not. If you’re just thinking that giving someone a bath is a dirty process, then you want to protect yourself by wearing the gloves” Tanya, 2 years experience (8.22).

Tanya makes that point that infection is not the issue, whether there is infection or not protection is still needed, there is a clear distinction between the two concepts. She went on to rationalize that if washing was removing dirt and cleaning then that dirt would actually go onto the nurses hands if they were not wearing gloves:

“I think probably thinking that the patient is dirty, because when – I suppose if you think washing someone is getting rid of their dirt and cleaning them, so therefore if you are not protecting your hands, then you’re getting that dirt by cleaning it off on to your hands. So it’s probably not necessarily that the patient is infected, but it’s probably thinking that the patient is dirty” Tanya, 2 years experience (8.14).

This washing was not concerned with infection but centred on dirt and uncleanliness. As previously discussed the genitalia needed to be protected against as this was considered a high risk area, even if the patient was perceived as being clean.

For less risky practices such as making beds it was stated that protection was needed if there was risk of contact with dirt; however, this practice had no immediate benefits to the patients. Discussions around the vignettes where the actors were seen wearing gloves to make beds indicated that while all participants had seen this practice they themselves reported having never carried it out on beds that were perceived as clean. They had made an assessment of the likelihood of contact with dirt and acted accordingly.

4.2.2 The known, the unknown and the familiar
While dirt was identified as something that needed to be avoided there was a clear distinction made between dirt that was known and dirt that was unknown. In this second component dirt and bodily waste of the participant’s relatives and close friends were viewed very differently from that of unknown people or patients. While washing water had been identified as dirty and unclean because it contained body debris (4.2.1), the same debris from a family member or close friend did not require the same precautions to be taken, for example gloves and protective clothing did not need to be worn when washing relatives or close friends. Melanie even commented on how as
children, siblings share bathwater with none of the connotations around dirt and skin cells in water being a consideration. If the dirt belonged to a family member there was no perceived threat and behaviour could be different. This change in reported behaviour was also accredited to the notion that washing unknown patients posed a greater threat of contact with dirt. Nancy discussed how she had showered her sister as a hospital inpatient without considering contact with dirt because she knew her, however when asked about showering the patient in the next bed to her sister she stated that she would have worn gloves for protection because she did not know them:

“If it would have been a non relative, I would put gloves on, yes. Well I would have done, yes” Nancy, 6½ years experience (7.33).

This was also summed up by Steven, who in response to a question about the risk from people he knew responded that:

“It’s more about the unknown” Steven, 14 years experience (8.44).

Steven’s grandfather had died recently and he had washed him while he had been unwell and post mortem. Steven felt strongly that there was no necessity to “protect” himself and stated that the same behaviour would apply if he were washing a partner:

“because it was family, I mean that was family, and I’d had intimate experiences in the context of washing him before and stuff like that. So it was somebody I’d known. And if it was my partner or somebody, I wouldn’t think twice about it” Steven, 14 years experience (14.17).

Family members, their dirt, and the perceived threat they posed, was considered significantly less, than for anyone who was unknown. Family germs were in a sense familiar and family dirt was considered more acceptable due to this impression of knowing. Familiarity with the person and their germs appeared to determine the precautions that were needed.

Unknown patients seemed to pose the biggest threat to all participants as they were unfamiliar with their hygiene practices, their dirt and germs. Precautions needed to be taken to avoid any unknown dirt until the participants informal own assessment of the patient’s habits and level of cleanliness could be completed. It was acknowledged that
behaviour to patients changed as they became known. For example, Carol felt that most colleagues would become complacent once they knew the patient:

“Probably initially yes, but then I think people just get complacent and they get used to nursing somebody, you know, initially they may not need to be gowned up, but people take those precautions” Carol, 13 years experience (2.1).

This was reiterated by Steven and Vicky, who saw that initially they might worry about the unknown, especially if they were unfamiliar with the patient’s routines:

“You’re worried. What you don’t know. Of the unknown basically. What you don’t know and what could be. But when you do know [get to know them], you feel a lot more sort of at ease to take advantage, not advantage - to sort of lapse if that’s the correct word” Vicky, 1½ years experience (3.3).

“It’s about the unknown. Even though I may work with a client, I’m not necessarily privy to their rituals and their routines and that and what they do to, to look after themselves. So, for me, it’s about, you know, erm, erm, on a continuum [getting to know them]” Steven, 14 years experience (8.48).

Because patients were unknown some sort of assessment needed to be carried out; participants claimed that risk assessment was the key:

“You really don’t know what you’re dealing with. And again that all boils down to risk assessment” Peter, 13 years experience (16.14).

This participant reported informally assessing the patient firstly to see if they actually needed any help with washing and if this was the case he then would assess what the risk to self would be. However the risk was always greater if the patient was unknown regardless of any actual evidence of risk.

For example, Roger explained that a stranger’s hygiene practices are unknown and therefore precautions must be taken. These precautions could only be relaxed once the person became known, over a period of time and being privy to their hygiene practices, especially if the participant had responsibility for their hygiene and could feel confident that they are actually clean:

“So if I’ve been attending to their hygiene needs, I know the client is clean, I’m washing every day, so after a month or maybe after a few days, I know the person’s hygiene standards. So what it is necessary to do for me I know, he’s now a known
client to me, he’s no longer a stranger. So therefore, so that familiarity is what also can determine the type of universal precautions and also the type of practice and intervention I would be going for” Roger, experience unknown (8.11).

When asked to clarify if his perception of risk reduced with familiarity, Roger made it clear that someone who is familiar can be treated differently and in some instances like any familiar person or family member:

“I would just carry on like any familiar person and giving, [care] like to somebody like a family member” Roger, experience unknown (8.30).

Once patients were known, procedures that might have been considered risky in the unknown patient and required self protection, became less problematic:

“But otherwise, I mean I wouldn’t, if I knew a patient, knew the psoriasis was an ongoing condition, just needed, she couldn’t reach her ankle maybe or whatever, then I would not wear gloves” Jean, 2 years experience (2.34).

So familiarity with the patient, as discussed below by Tanya affected the way that patients were perceived and the threat they posed:

“And again it comes down to that familiarity thing, because you just think you sort of know this person. And people talk about your familiar germs if that makes sense” Tanya, 2 years experience (8.44).

4.2.3 Faeces as an age related threat

The third component identifies that regardless of whether the patient was known or unknown, faeces were a concern to participants as a threat to self. While familiar faeces from known sources were less threatening, there was an even greater distinction made between faeces from babies and children, and faeces from adults. For example when asked about wearing gloves to change a soiled baby, Nancy responded that she had never done this, it was not the ‘norm’ and ‘nobody ever has done’. However she went on to explain that for adult faeces this would be different and gloves would be worn:

“Yes, I would!...Because my father is like that. My father is disabled, he’s in a home, and I had to look after him in hospital for two weeks. And he’s doubly incontinent, and I had to wear – well I chose to wear gloves because there was a lot more spillage
for starters and yes, but with a baby you don’t, do you? Nobody ever has done” Nancy, 6 ½ years experience (8.20).

Other participants commented on the fact that adult faeces were disturbing and different from that of a baby:

“Yes, it’s the same with babies’ nappies are different to, you know, cleaning up somebody, a healthy adult” Jean, 2 years experience (13.13).

Children and their dirt were seen differently by most of the participants although the majority of participants talked about children within their family or children that they knew. Some did, however, comment that dirt or faeces belonging to any child, whether known or not, would not be a threat. Only participants with any children’s nursing experience recognised that children could pose a threat; for them children could be just as dirty as anybody else. For these two participants, children could be seen in the context of patients and as unknown patients the threat they posed was perceived to be the same as adults, whilst for the other participants children did not pose the same threat. For example Vicky discusses how children’s faces is less disturbing.

“I don’t know if offensive is the right word, but it’s more disturbing. Yes it’s more disturbing, it’s more – a child is so innocent, you know, as a baby, as a child. You don’t worry about it so much” Vicky, 1½ years experience (10.1).

Outwardly it seemed that a moral judgment was being made, with the use of the term innocent raising questions about how the child and their faeces were perceived. There was a clear distinction between adult and child faeces and lack of familiarity or relationship did not seem to be a key determinant of threat from a child. Vicky for example discussed changing an unknown child’s nappy and was clear that any child’s nappy would not be a threat:

Vicky “No, I don’t see a threat there”.
Researcher “What about a child that you didn’t know?”
Vicky “I still don’t see a threat” Vicky, 1½ years experience (9.32).

The majority of participants graded faeces in order of risk. All adult faeces posed a risk, but more so if they were from an unknown person. Children’s faeces were less of a risk than adults’ with faeces from a known child being the most acceptable and
presenting the least risk. Some participants also commented on mothers’ attitudes to baby faeces, whose practice while not condoned, was in some part accepted as part of motherhood:

“Okay you’re changing it, you wash your hands afterwards, but actually I see a lot of mothers who don’t. They literally use the wet wipes, sort of change them and then they’ll go and make you a cup of tea or things like that. But generally the baby’s not in the equation anymore,” Nancy, 6½ years experience (8.40).

“Yes. They wouldn’t, I don’t know, I don’t think they’d necessarily wash their hands after cleaning, after changing the nappy or wiping the bum. Because it’s baby poo. Or their baby or. Yes. Yes, it’s baby poo, it’s their milk, it’s the by product, you know, that’s going through” Helen, 3½ years experience (8.3).

Thus suggesting that the significance of the faeces is different for mothers and that it is more acceptable and can be seen as rather as an extension of self as faeces is a by product of their own milk.

4.3 Rationalizing dirt related behaviours

Having defined dirt and considered some of the behaviours it provokes the second theme ‘Rationalizing dirt related behaviours’ now considers participants’ explanations and rationalization of behaviour; both their own and that of others they reported observing. The component parts of this theme identify important aspects of behaviour which go some way towards providing explanations. Participants explained their own and others’ behaviours in different terms; significantly they could recognise inappropriate behaviour in others but not in themselves. There was a sense that participants were at ease rationalizing their own behaviour but that they were unable to do this for others. The notion that a display or show was being performed emerged with some recognition that this may be driven by both the desire to appear knowledgeable and an awareness of patient scrutiny.

4.3.1 Rationalizing and rationalizing the irrational

In the first component the implication that the participant’s own practice was in line with current (at the time) infection control policy was clear from the first interview; all participants presented themselves as knowledgeable practitioners who understood
infection control practices. Alan stated that his own practices were good and followed policy:

“My own infection control practices are good and I follow the policies. I’m always careful when patients are in side rooms and make sure I don’t bring anything out, making sure I’ve washed my hands” Alan, 2 years experience (2.5).

This was reiterated in all interviews; participants did not recognise their own practice as anything other than correct. Participants also gave the impression that it was important that their knowledge of the scientific rationale and good infection control practices was recorded; for example, Betty saw her hand hygiene as more than thorough, while Carol commented that she never worried about cross infection because her own practices were so good:

“and I’ve never worried and I think that’s probably more down to my own practices than luck” Carol, 13 years experience (7.11).

“No I think my hand washing is probably a bit more thorough, up to the top of your uniform and spending about five minutes washing your hands if you’ve something that’s really infected” Betty, 5 years experience (2.40).

This over zealousness does not actually comply with the recommended policies (NICE 2003, NPSA 2008). The implication here is that if something is perceived by participants as somehow ‘more’ infected then the normal hygiene rules do not apply. The behaviour is rationalised, because it is ‘more’ infected, a distinction is made between ‘infected’ and ‘more infected’. The latter poses a greater risk and therefore behaviour beyond rational policy is required and justified.

Only Helen saw her practice as less than ideal, identifying that she perhaps was a risk taker towards herself but never at the expense of a patient. Helen also has a presentation of self she is trying to convey; I do take risks with myself, however I am a good nurse and would never put my patients at risk:

“infection control, I’m more motivated by its effect on the patient, less so on myself. I am more likely to take risks towards my own, towards myself than I am towards a patient.” Helen, 3½ years experience (3.38).
For the other participants their practice seemed to be beyond reproach. However, as the discussion developed it became apparent that they did not always report carrying out policy if they saw any risk to themselves, for example:

“\textit{But then like what I have explained to you, as a nurse, as a professional practitioner, it is up to you to rationalise what you deem is good and safe. And as long as you rationalise and are aware of the consequences of your action, I think that’s more important rather than just following guidelines}” Peter, 13 years experience (11.48).

This change to procedure was then rationalized so participants could maintain the perception that their practice was in keeping with policy and infection control. Their presentation that they fully complied with policy seemed to be the default position; only when behaviour was examined much more closely did the “what I say I do” and the “what I really do” become differentiated.

Participants clearly associated any change in their behaviour outside hygiene and infection control policies with the desire to avoid dirt, germs and bacteria or indeed anything that was as yet unknown. Dirt could contain germs and bacteria, which while not actually responsible for a named infection, could still potentially, be a risk to them. Infection, once identified, could be treated accordingly with actions that were supported by the policy recommendations. When there was an identified infection the behaviour was clear; a threat had been identified and there were specific procedures to follow. Self was threatened by infections and, as there was risk involved, precautions were needed. A definitive diagnosis of infection gave the participants the information they needed to decide what precautions to take. Most felt that their own practice and that of others improved when there was an identified infection. For example, Betty worked in an area where she considered others’ practice to be generally poor, however she reported that infection did improve other nurses’ practice:

“\textit{If something is obviously infected, they [nurses] are better because they want to protect themselves as well}” Betty, 5 years experience (2.9).

Other participants also felt that the confirmation of infection leads to an improvement in others practice, for example:
“once you’re in a clinical environment where there are infectious diseases, I mean everything is a risk and that’s why we take precautions with what we do” Tanya, 2 years experience (3.14).

However the participants in the current study, having acknowledged a situation where no infection risk existed, rationalized the irrationality of any of their own inappropriate protective behaviour by explaining that they were protecting themselves from dirt and uncleanliness which was unpleasant and unknown.

Only two participants had doubts as to whether the practices carried out were effective in reducing the threat that patients posed. Nancy questioned whether aprons did actually protect clothing and Geoffrey, who worked in a general area where barrier nursing was sometimes used, expressed concerns about the use of masks and how effective they were:

“We do have masks and all that, but at times you think again how effective are those masks that we are using, how safe are they?...You see, you use them but you don’t know how safe they are. So it’s something that you’re still thinking about, that you are at risk as well, as a health professional” Geoffrey, 1½ years experience (6.17).

However even though these practices were seen as possibly ineffective, both participants felt that, in the absence of any alternative, they had to do all they could to follow the procedures and to attempt to reduce the threat posed by patients to them.

Most participants identified how they assessed risk of the activity and acted appropriately, for example:

“I suppose in my practice I risk assess and the reason why you’re doing it or not. And not just say, ‘I’m washing a patient, I need to wear gloves and apron.’ You risk assess. Intact skin, no open wound, I’m going to wash my hands, I’ve got intact skin I’m going to wash my hands before I wash my patient, wash my patient, done” Peter, 13 years experience (11.22).

While Irene felt that she knew about risk activities and would always make the correct judgement:

“Yes, and, you know, you know the difference between a major risk and something that if you wash your hands and say, you know, you rationalise it” Irene, 20 years experience (7.29).
Again the participants presented themselves and their practice beyond reproach. The presentation to the researcher is one of a knowledgeable practitioner who can rationalise their own practice, with infection control practices allowing them to rationalize the irrational or indeed to rationalise the human nature instinct to protect against the unknown. When they chose to ignore or deviate from any formal hygiene or infection control policy, rather than acknowledging that this was irrational, they found ways to justify it, identifying a risk beyond the remit of the policy.

4.3.2 Rationalizing or condemning irrational behaviour in others

Having clearly identified their own practice and rationalized all aspects, participants subsequently condemned any inappropriate behaviour they had witnessed in others as irrational, or rationalized it as being a self protection mechanism in a situation where there was no risk. The participants appeared not to see any similarities between their own practice when they acted outside the policies and ‘rules’, and the practice of others who were perceived as doing the same; they did not acknowledge that others may also be trying to avoid dirt or may not know the patient. Olivia commented that if she was washing somebody who did not have a skin disease then she was just washing them:

“If you are washing somebody, you are just washing......So, what are you protecting from? I have no idea what they are protecting themselves from personally. The person is not having any skin disease and the person is just like me and you” Olivia, 3 years experience (7.46).

However, as discussed, the perception and management of this risk is much more complex and is influenced by whether the patient is known or whether there is any risk of contact with dirt or uncleanliness ascertained from the informal assessment carried out. Here the participants familiarize the uninfected person and see them as ‘just like me and you’. Furthermore when considering their own practice and the classifications of dirt it has been demonstrated that in order to be considered ‘just like me and you’ a certain level of cleanliness and knowing must be achieved. Participants failed to see any similarity between their own protection behaviours and that of others. The behaviours of others were clearly divided into either; the irrational, described as lack of thinking and ridiculous practice which went against common
sense and was completely without explanation; or rationalized as protection, for example:

“I think that’s what it is; they’re seeing it as a protection for themselves. Yes, which is ridiculous” Irene, 20 years experience (6.35).

However, each participant had discussed protecting themselves and had not recognised their own behaviour as anything other than acceptable. In addition, the protective behaviour of others was seen purely as protection for self, without any thought or consideration for the patient:

“It goes back to that thing about protecting yourself rather than thinking about the wider environment and the implications for the people” Steven, 14 years experience (3.1).

Again the participants had not made the concern for patients explicit in the discussion regarding their own behaviours, perhaps demonstrating that their ‘good’ practice following policy and rules implicitly meant that they had the patient’s interests at heart. Other nurses’ inappropriate behaviour was seen as being driven by a desire to follow their own rules and to act outside the recognised behaviour, even though they knew the scientific rationale behind the policies and procedures:

“I mean, behaviour in healthcare, I think sometimes becomes, again anal and compulsive, that they [nurses] want everything clean, but yet they don’t rationalise and actually think, ‘Oh using soapy water would be fine” Peter, 13 years experience (17.23).

It was not generally seen as a lack of education in qualified nurses, more of an attitude or mindset where the desire to protect self took precedence over all scientific rationale:

“I don’t think it’s a lack of education. ...I think it’s an attitude” Carol, 13 years experience (4.15).

“I have spoken and I know that there are some people who just think like that, it’s a mindset” Kenneth, 10½ years experience (2.21).

Additionally, where it was accepted that infection control might be a factor in determining behaviour, practice that was inappropriate was simply condemned as
being incorrect; patients did not seem to be the primary concern and what was
recognised as being in the forefront of thinking was protection of self, for example,

“They first thing that comes into their mind is to prevent spreading infection. That’s
the first thing that they say, it’s [wearing protective clothing] to prevent spreading
infection. But those patients are clean, those patients wash themselves, the floors,
everything is being cleaned by our domestics. I don’t really see any infection risk,
why are we doing it?” Peter, 13 years experience (3.5).

When asked about inappropriate use of gloves and discussing the incidence of this in
the vignettes and in everyday practice, participants consistently described this practice
as without scientific rationale:

“Yes. I really don’t know. I’ve never been given a proper rationale for somebody
wearing gloves for a patient that’s not on barrier [nursing]” Carol, 13 years
experience (3.4).

In addition participants described observing inappropriate behaviour of others such as
glove wearing, which in an attempt to protect self, actually increased risk because
they failed to change the gloves between patients; for example,

“Yes, their main concern would be themselves, although if they looked at it a bit
more, they are thinking, ‘That patient has got this, so we don’t want to spread it
around.’ Although they are [spreading it]” Kenneth, 10½ years experience (2.26).

The participants saw this incorrect wearing of protective clothing as self protecting
and poor practice. One of the discussions from the vignettes (see appendix 4 and 5)
focused on the wearing of double gloves for certain procedures; this was a practice
that most participants had witnessed and considered to be poor practice, although
once again there was no rational explanation for it:

“You see I’ve seen this, I’ve seen it before, and I know that they think it’s protecting
themselves. That’s the main thing that they think of. Wearing double gloves” Kenneth,
10½ years experience (2.16).

“Well I think first of all they’re clearly protecting themselves, they’re not thinking
about protecting other people” Steven, 14 years experience (1.32).

All participants agreed that they themselves would only wear gloves when needed,
either because there was infection or there was risk of contact with dirt, whereas they
felt that others carrying out inappropriate protection practices did so because they were not thinking about the scientific rationale behind the practice and only considering themselves. No thought was being given to the patient in terms of how they felt or the increased risk that inappropriate behaviour could pose. Some participants even thought the behaviour may simply be driven by laziness or a desire to save time by using gloves as an alternative to hand washing:

“Or maybe they just can’t be bothered to wash their hands thoroughly, hand washing again, you know. Some people take off these gloves and just one pump of alcohol gel and that’s it. That is not disinfected properly,” Linda, 2½ years experience (11.44).

The participants recognised and always condemned any incorrect and inappropriate behaviour in others. When they recognised that their own behaviour or practice was the same or similar, they explained their actions as a defence against dirt and as an avoidance strategy. They did not however offer this as an explanation for others behaviour.

4.3.3 The display of practice: is it all a show?
The final component of this theme identified that role modelling and leading by example, whether to peers or patients, was a recurring topic throughout the interviews and suggested that the display of correct procedure was the basis of improving practice. Although there was concern voiced by participants that an incorrect display would do more harm than good, any practice witnessed often enough could be taken as the norm and become part of routine practice. Roger verbalized how when patients see certain procedures they come to accept them as the norm:

[Patients think] “they are [nurses] just doing it because they’re being asked to follow the procedures and that’s all it is.’ So that maybe it exactly” Roger, experience unknown (7.24).

When considering others’ inappropriate behaviour, participants identified that this was an attempt by the other staff to give the impression that infection control and transmission were taken seriously. There seemed to be an assumption that the overt display of wearing protective clothing by nurses was to give the impression to patients that they were being thorough, and taking precautions. Even the participants themselves accepted that sometimes they were trying to give the right impression:
“and at times, even in the clinical area, they [patients] do watch us as health professionals. They do watch us as to how we provide care. You see. They do watch us how we provide care, so that also should give us an indication that it’s something that is what they’re thinking about seriously” Geoffrey, 1½ years experience (4.48).

Steven “You could argue, and I think that, erm, I think that erm, whether there should be a lip service to the fact that, that we wear gloves, observationally, if someone is checking you out, or alternatively if you’re seen to wear gloves, then that seems to be more, more of an indicator that you take these things” [pauses]…

Researcher “Seriously?”
Steven “Yes” Steven, 14 years experience (1.37).

The concept of making the right impression or performing for the patients, was a recurring theme that participants recognised both in their own practice and in others:

“Yes, so you’re sort of doing it, ‘I don’t want this patient to see me wash the other patient without gloves on and then go over to them and do the same thing without wearing gloves.’ They might see it as, ‘You’re transferring things from that person to me’.” Linda, 2½ years experience (12.18).

“So you’re doing it [wearing gloves] to prevent yourself being basically assessed by the patient as incompetent or not maintaining hygiene standards. Linda, 2½ years experience” (12.25).

“We’re under thorough scrutiny by patients. They see everything you do…So I think it’s a bit of both really. Yes, so I think we do that to satisfy the patients” Linda, 2½ years experience (13.36).

This overt wearing of protective clothing and the impression it gave was reiterated by Roger, who on the one hand felt that patients may be offended by being washed by someone wearing gloves asking “What is wrong with me?” (7.8) while on the other hand the patient may feel that the nurses were only following procedure and that it was nothing personal, because they knew the nurses and knew they were preventing infection – even if in reality there was no infection risk and the display was not actually necessary:

“[patients say] I’m used to these nurses, I’ve got my relationship, I know they don’t mean it that way, [that there’s something wrong with me]” Roger, experience unknown (7.23).
One participant suggested that if a patient sees a nurse touch another person they may actually want the nurse to wear gloves to prevent anything being transferred to them:

“You touched that person with your hands and you’re coming to touch me, and I didn’t see you wearing gloves, can you wear gloves?” Linda, 2½ years experience (12.12).

However the data suggests, an acknowledgement that wearing gloves to wash a patient could be offensive and may make the patient feel dirty, with most participants recognising that wearing gloves to carry out simple procedures could be interpreted in different ways, for example:

“I mean I won’t go to every patient with gloves and apron because it makes them feel like they are dirty when they are not” Kenneth, 10½ years experience (3.20).

“I think they feel, in one way they probably feel embarrassed because they think that people think that they’re dirty or sometimes there are reasons why you should wear gloves and aprons” Peter, 13 years experience (15.41).

Although the idea that patients are dirty is often what participants were saying when they discussed protective behaviour; if they suspect dirt they take precautions. Carol sums this up quite succinctly:

“Well I have seen nurses wash patients as well with gloves on, … that to me is awful, because to me that says that you’re not clean, so I would imagine that some of the patients feel that way. I’ve never had a patient complain to me about a nurse not wearing gloves” Carol, 13 years experience (2.46).

Carol implies that patients could pick up on this and get the impression that they are being perceived as dirty or unclean, whilst there was however some recognition that a number of patients preferred the use of gloves, seeing it as less personal or that the correct procedure was being carried out:

“And I suppose then, it all depends on the patient. You [a patient] would expect them to [wear gloves], so it wouldn’t bother you [the patient] …” Kenneth, 10½ years experience (9.28).

“Then again, sometimes, patients don’t want nurses to touch them with their bare hands. ‘Don’t touch me. I’m a different person, you’re a different person, use your gloves.” Linda, 2½ years experience (13.19).
However patients can only see this as correct procedure if that is the impression they have been given, i.e. if they are convinced by the performance. If the display has been consistently that gloves are worn for all patient contact then this will become accepted as the norm.

There was also clear acknowledgement that patients were now more informed about the risks involved in hospital stays, although this information could have derived from the media and may not be factually correct. The media and the reporting of hospital infection were treated with contempt by all participants. There was a feeling that facts were not given in full and reports were scandalised:

“I mean the newspapers have sensationalised it, they play up certain facts and play down others, or even omit some completely” Alan, 2 years experience (8.14).

The participants themselves reported not being affected by the media and felt that reports were unbalanced with the truth being poorly represented and that the public were being manipulated. There was a sense that for those who were unfortunate enough to become infected, particularly with MRSA, the media reports fuelled despair, and led the public to believe that invariably death would occur from infection:

“The reactions are, I think, over the top, because they [the public] just think, ‘Oh my God, my loved one has MRSA, he’s going to die.’ That’s the immediate reaction, that’s how the press have created MRSA” Peter, 13 years experience (14.39).

4.4 Transitions in place and role

While the second theme considered how behaviour is rationalized, in this third theme the environment and the context in which dirt is encountered emerged as a significant factor in determining behaviour. While participants identified that there was likely to be dirt everywhere in the hospital setting and that although hospitals may look clean they may not be, their relationship to the hospital environment and the role they played in it was significant. They perceived themselves as clean on leaving home and entering the hospital environment and identified that this environment was a threat to their state of cleanliness. Equally the relationship to the home and their changing role within it affected their perception of any risk posed by dirt and germs; either within
the home or transported there by themselves. The home and those within it needed to be protected from anything that could be transported from the hospital and their state of cleanliness, lost by contact with the hospital environment, had to be regained.

4.4.1 Where is the dirt?
The first component focuses on identifying where dirt can be found. There was a consensus throughout the interviews that although hospitals may look clean they were in fact dirty and even though this dirt may not be obvious it was still a cause for concern:

“They might be [dirty].  The floors are always very shiny and polished looking but that doesn’t necessarily mean they’re clean” Carol, 13 years experience (6.34).

“If I look under the bed, it’s full of dust.   And pieces of food …   I go round before a new patient comes to make sure they’ve cleaned the bed properly, move it, mop the bedside, clean everything before” Diana, 2 years experience (6.24).

The participants in the current study attributed dirty hospitals to a number of factors: poor cleaning practices; patient contact with the hospital environment; and lack of attention to detail. Some areas were considered cleaner than others; with Accident and Emergency, where there was high patient contact and turnover, being seen as particularly dirty, while staff offices were considered to be much cleaner. Institutional dust and dirt were seen as a threat to patients who some participants saw as more vulnerable because they were unwell:

“Maybe they are compromised, they’re in hospital anyway, they’re vulnerable” Melanie, 2 years experience (8.45)

Although participants recognised that patients were at risk from poor practice and perhaps susceptible to harm from this poor practice, the wider environment was the main context in which the actual vulnerability of the patient was discussed; their risk from the hospital environment exacerbated by the fact that they were unwell.

Smell was also a cause for concern, with some participants observing that hospitals no longer smelt clean. Although smell could not guarantee cleanliness it gave participants an overall reassurance and the impression of cleanliness. This impression
of cleanliness was considered an important issue for the public who needed to have confidence in the hospital. Eric had experience of hospitals abroad and felt that British hospitals did not give the same impression of cleanliness:

“Sometimes it’s just appalling. I mean, because you enter and it’s like, there’s a smell of like, you know, urine, whatever, everything; it’s much in your face”...“That doesn’t mean that you have cleaned everything properly” Eric, 6 years experience (4.27).

Of the many areas considered to be dirty, toilets generally were treated with the most distrust with participants commenting that they may look clean but one needed to be cautious as looks could be deceptive and precautions needed to be taken. Participants fell into three groups when discussing which toilets they themselves would use: those that would use any toilet providing it looked clean; those that felt that patients’ toilets were dirty and should be avoided; and those who felt that mixing staff and patients in the toilet was unprofessional and a step too far in terms of maintaining boundaries and roles:

“They might be unpleasant even if they’ve just been cleaned, I’d still be- I think it’s probably more the fact that it would be breaking down that nurse/patient role. That barrier that’s there. They’d be stepping, I’d be stepping into one of their realms. It’s just if I saw a patient coming out of the staff toilet, I would probably be like ‘hang on a minute’ ” Melanie, 2 years experience (6.12).

Some participants commented that they ‘knew’ what patients did in toilets so they would not use them; however there was no explanation about how patients’ toilet behaviour differed from staff toilet behaviour. One participant did point out that if one was to become a patient one was somehow viewed differently and would lose the right to use the staff toilet. When the nurse becomes a patient they are classified as an ‘other’ and their cleanliness is no longer assured; they have made the transition from nurse to patient and are therefore treated differently. They have in effect become ‘unknown’ and need to become ‘known’ again in the patient role before they can be perceived by the staff as clean.

This description of changing role reiterates the discussion of roles played and perceptions of patients, particularly the unknown patient being seen as a risk. Within the hospital there are roles to be played and it is difficult to transcend these. There are also boundaries and divides between roles; what divides the participants from the
patients is the level of cleanliness each has achieved. There is clear identification that hospitals are dirty, the patient’s level of cleanliness cannot be assumed and participants are clean.

When considering the hospital environment further, participants recognised that hospitals were cleaned at least once daily, floors polished daily and bed linen changed on a regular basis. Conversely, although participants’ homes were stated to be clean there was a feeling amongst them that practices at home may not be as regular or as thorough as those carried out in hospital. For example, Linda discussed not only daily hospital cleaning and the changing of bed linen but also the potential for bacteria to grow in the home:

“You can never say it’s much cleaner than the hospital, it’s your home, you feel at home when you’re there, but it doesn’t stop bacteria or things from growing....The hospitals are cleaned daily, bed linens are changed daily.....At home, you can sleep in your bed for five days or, you know, even more, some people, before you can change the linen. God knows what’s in there when you’re sleeping!” Linda, 2½ years experience (7.8).

There was also some agreement that hospitals could give the appearance of cleanliness if they were organised, whereas the home was often more chaotic.

“*In terms of cleanliness, in appearance, yes I would say – in appearance hospitals are better in appearance, because things are where they have to be. Organised and things like that. Whereas in the home, things tend to be not quite as [extreme]”* Roger, experience unknown (12.8).

Rather contradictorily the general consensus was that homes were clean although not necessarily cleaner than hospitals, which most participants perceived as dirty. Familiarity with occupants and their practices in the home was prevalent and some practices that were carried out in the home were not mirrored in clinical practice. There was a feeling that if participants knew where germs and waste came from the risk attached to them was reduced, so for example cleaning the toilet at home did not require the same precautions as cleaning a toilet in clinical practice because in clinical practice participants did not know whose germs and waste they were dealing with.
When asked about wearing gloves to clean the bathroom at home Jean responded that they were not required in her own home, however at work gloves were definitely required:

“It’s stupid, but it’s sort of knowing where your germs have come from and not knowing where other people’s germs have come from, and that’s really sad!” Jean, 2 years experience (13.6).

This known and unknown concept, which has been a constant theme throughout the data, is re-iterated here and is further confirmation of the compartmentalization of risk and behaviour. Other participants also commented on the nature of knowing the home and the behaviour of those in it, as opposed to the unknown behaviour of patients:

“In your own house, you know what everyone does and their practices. So you feel a little bit more comfortable doing certain things as opposed to somebody you don’t know, or someone who is a patient” Tanya, 2 years experience (9.1).

It was apparent that for most participants familiarity with behaviour, hygiene and to some extent, germs within the home, reduced the threat. There was recognition that things in the home were perhaps a little more relaxed, although all participants felt they kept their homes clean. However the idea of what is actually clean is subjective; perceptions of what constitutes a clean home differs from person to person as one person’s perception of clean is another’s dirty, seen in this quote from Steven:

“It’s like, for me it’s also about the things around you – if I go to somebody’s house, I look at the state of their bathroom. Yes, I do, so, you know, and I think, ‘God you’re always talking about your cleaning, but there’s no evidence!’” Steven, 14 years experience (9.45).

However there is some ambiguity here. Hospitals are not perceived as clean, homes less so, however, the home needs protecting from anything transmitted from the hospital:

“Yes, I do worry as well, because that is why I do take precautions. For instance, my uniform, I make sure that I change my uniform before going home, even though, even if I have to go home with my shoes, I make sure my shoes are to stay by the door” Geoffrey, 1½ years experience (2.49).
For the participants, dirt in the home is normal dirt and acceptable because it is known. What is evident is that while hospitals may be cleaner generally, the potential for contamination from others’ dirt and body waste was far greater there.

4.4.2 Transition in place: practice and rituals

Finally the home, and those in it, needed to be protected from anything that could be transferred from the hospital. Uniforms, shoes, and the participants themselves could be the source of dirt or infection and could introduce them to the home. In order to protect the home from contamination these threats had to be dealt with. This required the participants to be aware of the risks they posed to the home and to recognise when they had been in contact with dirt and germs. For Peter these precautions were all encompassing and before touching his children or loved ones he needed to remove all sources of risks:

“When I go home, you know, put my uniform where it should be, my shoes where they should be, take a shower and that’s it” Peter, 13 years experience (13.22).

This participant, and others, had specific rituals to be carried out on arriving home and designated places where uniforms and footwear that had been worn in the hospital needed to go.

For some, clothes and shoes were removed as soon as they arrived home and washed separately from other clothing; others just removed their clothing and washed it alongside regular clothing. This separation of clothing was not explained further, it seemed to be regarded by participants as a necessary and obvious precaution that needed to be taken, for example, Alan and Roger were amongst those who stated they washed their work clothes separately:

“The main one that I do is have a clean uniform for every shift. And I don’t have my uniform mixed with the rest of my clothes. They’re washed separately” Alan, 2 years experience (4.18).

“Yes, and it feels so much like, so very cautious about the clothing, the shoes, socks and..., I would take the necessarily precautions [keep them separate]” Roger, experience unknown (10.43).
Travel to and from the hospital did not affect the perception of risk the participants might pose and whilst there was some recognition that something could be transported from the home to the hospital, only two participants described how they changed out of their uniform at work and then took it home to wash:

"Because I don’t wear my uniform home and make sure I wash everything [work clothes] from any other clothes [separate]” Diane, 2 years experience (5.8).

In the most part clothing was recognised as a threat to the home and yet participants stated they were happy to wear this threat home. Only when they entered the home did they acknowledge the risk they could pose. Participants now deemed uniforms and clothing unclean and a threat. In addition, participants expressed concerns that dirt or germs could have been transported home on the body, although they did not acknowledge that this threat existed on their journey home when they could have come into contact with the general public. Regardless of threat, the consensus from participants was that getting clean at the end of a shift was something that needed to be done on arrival at the home. Most participants felt a shower was required to remove this dirt before home life could begin. For many, the body was seen as a potential vessel for transporting dirt and this had to be rectified, any interaction with the home was postponed until the ‘state of cleanliness’ had been achieved and all possible risk of bringing unknown dirt in to the houses had diminished, for example:

“I get home after a 13 hour shift, I go and have a shower anyway... I do sort of consciously think, ‘I need to get clean first” Jean, 2 years experience (12.15).

“When I used to work in General [general medical area], before I sat down or did anything, I would actually go straight to the shower, take a shower, take off my clothes and sort of put them in, sort of keep them in there. And think about my shoes and where they've been and stuff” Francesca, 3½ years experience (6.49).

While Francesca had experience of working in an adult general medical ward she was now working in a mental health setting working with adolescents. She reported that her behaviour had changed since she had moved specialities and that her perception of needing to shower and change her clothes now depended on what patient contact she had during her working day. In some instances she would change her clothes half way through a shift whereas at other times she would wait to take a shower at home before going to bed.
While most participants liked to think that they were not guilty of transmitting anything to the home there was some acceptance that it could be quite hard to avoid:

“So, I like to think that I haven’t transmitted anything from work to home. I probably have, you know. It’s probably very hard not to” Alan, 2 years experience (4.31).

“Oh there are always risks of things. There is always a potential because some [dirt] are seen and some are unseen. So therefore I can’t really say what I’m taking home or what I’m even bringing from home here” Roger, experience unknown (10.27).

What was a cause for concern in the hospital may not translate to the home. For example Melanie recognised that electric fans in her home might actually be dirty and although this had never to her knowledge caused any problems, the same kind of dirty equipment may be harmful to a patient, possibly because of the nature of the dirt or the patient’s vulnerability:

“My fans are always dusty and it’s never hurt me before, but it’s not the point, you know, you’re providing a service and you’re supposed to be caring for these people. Maybe they are compromised, they’re in hospital anyway, they’re vulnerable” Melanie, 2 years experience (8.44).

Participants identified that there was still a need to protect from dirt and bacteria in the home and while they could be contaminated by the hospital, the home could also be contaminated. However, although homes may not be seen as necessarily cleaner than hospitals there was initially a sense that staff could at least relax their hygiene practice a little at home. Above all there was agreement that the home needed to be protected:

“Well, I think it all boils down to cleaning” Olivia, 3 years experience (9.36).

Here there is the assertion that the home is under threat from dirt transported from the hospital and while for most the main issue was protecting themselves, their families and their home a small number recognised that the home could be a threat to the outside world. There was recognition that the home could harbour bacteria and while not a threat to the occupants, could actually be transported outside; cross infection could work both ways. For example Peter discussed how he emphasised to his family at home how they are preventing infections within the home:
“I say there are things [germs] that actually we have at home that we bring in hospital” Peter, 13 years experience (15.24).

Again, because any bacteria in the home was described as known and familiar, it did not pose a significant threat to those within, however those in the home were not as vulnerable as patients and therefore the risk was to some extent diluted.

4.5 Summary of findings

The participants in this study made early clear distinctions between dirt and infection. They saw unknown patients as dirty and unclean and identified a need to be protected from them. Level of cleanliness was influence by familiarity, the family being the most familiar and consequently the least risk. Patients however could achieve a state of familiarity and therefore cleanliness as they made the transition from unknown to known. The concept of familiar germs was evident again with germs of self and family being the most familiar. In the presence of familiar germs or a patient who had achieved familiarity, behaviour could be different. Faeces provoked a feeling of disgust and even faeces of family members posed a risk, this however was not consistent in relation to children. Children’s faeces, whether known or unknown, were reported to pose a much reduced threat. These activities and precautions could be ordered according to risk (figure 2).

![Figure 2. Ordering of risk activities](image-url)
Participants also consistently recognised the behaviour of others as incorrect and could not see any similarity between their own practice and that of the others they were criticising. The data revealed that practitioners chose to present themselves in a positive light, as knowledgeable practitioners and that they were convinced by the performance they were giving. They were however unconvinced by the performance of others and could see this as merely a display that had not been thought through and did not follow guidelines. Furthermore patients could reportedly be convinced by the performance especially if it reinforced what they perceived to be correct procedure, either through the constant displays or information from the media.

For most participants the rituals and practices that they had learnt and developed over the years had to be carried out before family life could begin, once the state of cleanliness is achieved their status is changed from ‘dirty’ to ‘clean’. Although there were some risks in the home the participants perceived themselves as generally clean at home and when they enter the hospital. Once they had entered the hospital they were at risk from the patients and the environment. Their clothing and bodies could become contaminated and they needed to protect themselves in order to remain clean. Any change in this state of cleanliness was not formally recognised until they returned to their home. On arrival they undergo a personal transition from clean to dirty and the home must be protected from them. The status is challenged depending on place and role; transitions occur as the participants journey from a threatening environment to a ‘safer’ environment.
5.1 Introduction
Analysis of the data identified three distinct themes of, “The classifications of dirt”, “Rationalizing dirt related behaviours”, and “Transition in place and role”, which were made up of eight component parts. In this chapter the meanings of the key findings are discussed. For each component part comparisons will be made to relevant literature and the knowledge developed from this study will be identified.

5.2 The classifications of dirt
As identified in chapter 4 the theme “The classifications of dirt” consisted of three component parts. In this section each part will be discussed individually with an overall summary provide at the end of the section.

5.2.1 What is dirt and how do nurses deal with it?
In discussing contact with patients participants made a distinction between infection and dirt. Where their assessment of the patient identified a risk of contact with dirt precautions need to be taken. This demonstrates similarities with nurses in Whitby et al’s (2006) study of behavioural determinants in handwashing, who reported that they made an assessment of risk of infection based on criteria of diagnosis, the patient’s physical appearance and perceived general cleanliness. Whitby et al’s’ participants also stated that they made an assessment of the degree of cleanliness or dirtiness of the patient which has some parallels with this study. However in the current study assessment was driven more by the need to identify risk of unknown dirt, not necessarily infection risk.

Patients were categorised by participants as dirty until proven otherwise. Although this categorization could alter as the patients became known, precautions were reported to be needed until certain criteria had been met. This initial categorization of patients as dirty echoes Jeffrey’s early work (1979) which describes the type of patients attending accident and emergency departments. While dirt is mentioned particularly in relation to drunks who were referred to by staff as ‘normal rubbish’, Jeffrey pointed out that ordinary people could be dirty as well. This re-categorization,
a significant concept in the reported behaviour and practices carried out, will be discussed further.

In the current study participants felt the need to be protected from these dirty patients and precautions were taken. Furthermore participants identified that some bodily areas posed more of a threat, exampleing the anal area. This reference to the anal area concurs with Goffmans (1971) assertion that the rectum is one of the most contaminated areas of the body. According to Goffman (1971) those areas where the border between inside and out is unclear, for example at an orifice, and where body waste is involved, are the most polluting. However participants in the current study were also concerned about what patients may have on their hands. Participants feared that patients could have faeces on their hands and if touched by these they could get somebody else’s faeces on themselves. This supports the findings of Stevenson and Repacholi’s (2005) study of core disgust elicitors where any indicator of dirt or lack of personal hygiene may give rise to the fear that faecal contamination from dirty hands is a possibility. There was a worry in the current study that patients may have touched certain forms of dirt and this could be transferred to the nurse. While participants did not identify this as an infection risk they indicated that any unexpected contact with dirt should be avoided, meaning that precautions should be taken when suspicion arose.

This sense of revulsion or disgust has been considered by many researchers. Royzman and Sabini (2001) for example see it clearly as an emotion, provoked by rotting or decaying matter, especially body waste or matter. Seeing, smelling, and touching waste products or matter provokes disgust, with the highest disgust elicitor being identified as waste products entering the mouth or ingestion which (Angyal 1941, Rozin and Fallon 1987).

For most participants contact with faeces and to a lesser extent body fluids was by far the biggest threat of dirt. The focus of reported behaviour during patient contact was to protect the participant not the patient. Dirt and in particular faeces caused disgust and revulsion and a threat to self which some see as an automated response, an animal instinct which is concerned with survival rather than a conscious level of thinking based on scientific rationale or founded in cultural responses and beliefs (Curtis
Faeces were the most predominantly discussed waste product, or bodily fluid, while other fluids were referred to in broader terms. However those fluids linked more firmly to culture and taboo, such as menstrual blood (Douglas 1966), were not specifically mentioned in this context of patient care.

For Van Dongen (2001), this type of dirt (i.e. body fluids, namely faeces, vomit and sputum) is considered the worst and evokes a feeling of disgust. This is reiterated by Twigg (2000) who found that the products of other people’s bodies were the main source of revulsion for care workers. For many the starting point in explaining the nature of disgust and the properties of those substances that elicit disgust is the work of Angyal (1941) who identified that faeces, urine, mucous and waste of humans and animals that had any form of softness, stickiness or sliminess caused a disgust reaction. This matter may not actually be disgusting in itself but is rendered disgusting by the meaning that is attached to it, what it symbolizes to us (Royzman and Sabini 2001), it is in effect viewed as matter out of place (Douglas 1966).

Washing a patient presented the opportunity for the participants to come in contact with dirt and bodily waste. Here, the uncleanliness of the patient was the participants’ main concern. Protective clothing and gloves could provide the protection needed for the participants. In particular gloves could prevent the participants’ hands from coming into contact with dirt from the washing process. Washing removed dirt from the patient into the washing water and could then be transferred to the participant. As Twigg (2000) found, care work can be polluting and nurses and care workers use gloves to protect against this pollution. While Twigg concurred with Douglas (1966) that this protection may be more to do with professional boundaries, these ideas were not strong in the current study. While there was an implication by one participant that gloves could maintain boundaries between people, all other participants discussed the wearing of gloves in terms of self protection. However there was some suggestion that wearing protective clothing could give patients the impression that nurses knew what they were doing and this concept of giving the right impression is discussed further in subsequent sections.
5.2.2 The known, the unknown and the familiar

There was a clear indication that known patients were different to those that were unknown. Furthermore nurses’ reported practices could change once participants had assessed the patient’s hygiene practices, been involved in their care and gained an insight into their level of cleanliness. Knowing in terms of cleanliness was not only linked to social knowing; it involved participants either having direct observation of patients hygiene practices and rituals or direct responsibly for their hygiene. If participants were actually involved in the daily hygiene care of the patient then a ‘state of cleanliness’ could be achieved and there was some suggestion that these patients could be treated rather like family. Unlike the risk of infection from family sources, being considerably less than non family members and public sources (Whitby et al 2006), these participants talked more in terms of dirt and familiar germs in relation to the family, and how behaviour could change as familiarity grew. Family members, their dirt and the perceived threat they posed was considered significantly less than for anyone who was unknown. Family germs were in a sense familiar and family dirt was considered more acceptable due to this impression of knowing. Familiarity with the person and their germs appeared to determine the precautions that were needed.

This concept of familiarity has some parallels with the HIV literature regarding risk assessment and risk behaviour where judgements are made about risk (Lear 1995). According to Lear (1995) and Lupton et al (1995) while some of this informal assessment centres around lifestyle and sexual history it can also be made on the basis of appearing clean and disease free and the length of time the individual has been known. Both Lear (1995) and Lupton et al (1995) found that a potential partner’s apparent dirtiness or cleanliness contributed significantly to the assessment of the risk they posed. The participants in the current study also made a judgement of risk by a process of informal assessment. This assessment was based primarily on the amount of time they had known each patient and their knowledge of cleaning practices and behaviour, although the appearance of being clean was also considered.

Familiarity with the patient gave a sense of knowing, not only the person but also their hygiene practices, and indeed their germs. Knowing the patient and the source of any dirt and germs reduced the perceived risk. The concept of a known source and the
effects it has on response has been reported elsewhere (Stevenson and Repacholi 2005) as has disgust associated with an unfamiliar person being greater than when the source is either oneself or close family (Case et al 2006). Others have found how we have a preference for our own body smells and the smells of our families (Royzman and Sabini 2001). This also concurs with Stevenson and Repacholi (2005) who, in considering core disgust elicitors, state that those we share a relationship with are less disgusting than those of strangers. This supports the current study where participants repeatedly confirmed that as they became familiar with their patients and developed a relationship the threat was reduced.

5.2.3 Faeces as an age related threat

For most participants adults’ faeces were considered particularly distasteful while babies’ faeces were considered completely differently and were less threatening. This reduced threat has been recognised by Van Dongen (2001) who asserts that “what leaves the body of a child is not as dirty and repulsive as what leaves the body of an adult” (p295). Alternatively, while the response to one’s own child’s faeces has been explained in the context of the relationship (Rozin and Fallon 1987), one’s own body products do not elicit a disgust response until they leave the body. We are not disgusted by the thought of what our bodies contain, we respond once these products are separated from the body. According to Rozin and Fallon (1987) the borders of the body can however be extended, beyond self. In some instances children and lovers can be included in body boundaries, for example the acceptance of a child’s waste products without disgust is in effect an extension of self. Primarily disgust involves things that are alien to self and beyond boundaries of self, however the relationship between parent and child may weaken these boundaries facilitating acceptance of others’ waste products. While this does not specifically explain the perceived risk attached to other children, in light of this, a relationship with a child, an innocent at that, may also allow the boundaries to blur and weaken. This use of the term innocent does however raise questions; innocent in what sense? Free from corruption and as such less of a threat; or simply pure and innocent because they are reliant on others to keep clean. They cannot carry out the rituals and therefore cannot be held to account for any dirt or uncleanliness. Conversely adults may be corrupt or may have been exposed to corruption, they have lost the innocence of the child; or as they are
responsible for their own hygiene they can be judged guilty if they have not maintained the expected social levels of cleanliness.

Participants graded faeces in order of risk, with unknown adult faeces posing the highest risk and a known child’s faeces posing the lowest risk. This supports the findings of Curtis and Biran (2001) that faeces from one’s own child or a child from within the extended family was the most acceptable and least threatening, whilst an unknown adult’s faeces posed the highest risk and was to be avoided wherever possible. There was more disgust attached to an incontinent adult’s faeces, perhaps because children are not expected to be in control of faeces until a certain age, whereas incontinence is viewed negatively in adulthood. In his work discussing how one presents self to society Goffman (1956) described the process of defecation as an activity that was performed in private; outside the performance and away from the ‘audience’ in a designated place. When confronted with a baby’s or child’s faeces in a nappy order is to some extent maintained; this faeces is not out of place, whereas an encounter with adult diapers or continence aids is not accepted in the same way. These ‘out of place’ faeces stretch the boundaries and concept of the closed body (Elias 1978, Van Dongen 2001). Van Dongen (2001) considered these boundaries and how older people may not have control of the closed body; for Van Dongen’s participants, who were nurses in a mental institute, this loss of control was seen as vulnerability and as such tolerated. Children, especially babies, also have this vulnerability as they are unable to control the flow from their bodies or deal with waste products, thus it may be hypothesized that their faeces do not generate the same disgust.

According to Twigg (2000), the ability to self pollute is limited; dirt according to Twigg relates to other people, more specifically other people’s bodies and their by-products. Case et al (2006), who also considered how disgust at core elicitors was moderated when there are other important goals, identified faeces as a core disgust elicitor and examined how mothers responded to their own babies’ faeces in comparison to the faeces of another child. While the findings suggest that generally mothers found nappies filled with faeces only mildly disgusting, in terms of level of disgust, the nappy of their own child was less disgusting than others.
While the participants of this study demonstrated a clear threat from faeces, they did not actually discuss faeces in terms of harm or identify it as harmful per se, unlike participants in other studies (Curtis and Biran 2001, Whitby et al 2006). They identified it more in terms of risk of dirt and identified that faecal matter belonging to a relative was less of a risk or less dirty than unknown faecal matter.

A link has been identified between transmission routes of infection and disgust elicitors such as faeces, with faeces being identified as eliciting disgust and potentially containing pathogens that are harmful particularly when ingested using the faecal-oral route of transmission (Curtis and Biran 2001). While only one participant in the current study discussed how distasteful it would be to have faeces in ones mouth, others did express revulsion at adult faeces and discussed how they would take precautions to avoid it and protect their hands, as hands contribute significantly to the transmission of faeces and consequently pathogens (Judah et al 2010). However participants reported not avoiding children’s faeces to the same extent although the pathogens are potentially the same. Some other factor, knowledge or reasoning is overriding the natural desire to avoid contamination, possibly the notion of the innocence of the child, perhaps in humans this automated avoidance reaction is also influenced by moral reasoning, or the desire to nurture overcomes the feelings towards children’s faeces (Stevenson and Repacholi 2005).

5.2.4 Summary of the classifications of dirt

From a scientific perspective the behaviours identified would be seen as irrational because they do not support the scientific rational, however, if protection is needed from the unknown then suddenly a rational reasoning can be applied. What is not rational is the classification of difference between own, known and unknown dirt. Dirt within a social context can be viewed differently; other’s dirt is perceived as somehow dirtier than our own (Twigg 2000, Curtis and Biran 2001). Familiarity, by being aware of others’ hygiene practices or imposing one’s own hygiene practices and standards on others by virtue of role and position, all reduce the threat from their dirt. According to Stevenson and Repacholi (2005) the ‘source effect’ influences the response we have to disgust elicitors whether this be visual or olfactory; one’s bodily waste while distasteful is not as offensive as the waste of strangers. Stevenson and Repacholi’s (2005) series of studies of responses to interpersonal odours showed that
the perceived risk of disease and threat was higher when the disgust elicitor was generated by someone other than self, but that responses are influenced by exposure, so that strangers produce the greatest responses. However unlike the current study Stevenson and Repacholi’s participants were not nurses and the responses were not in the context of clinical practice.

Case et al (2006), through an investigation comparing the disgust responses of mothers to faeces of their own child and that of another child, support the notion of source effect. The source of disgust has an effect on the response. Case et al (2006), suggest that source effect could be placed within evolutionary theory, accepting that disgust elicitors have a role in microbial transmission and the evolutionary explanation. For Curtis (2001) hygiene behaviour is universal in human beings and is driven not just by wanting to avoid disease but also by the desire to be clean, as being dirty is unpleasant and disgusting. Humans have a hygiene instinct and a prime reason for behaving hygienically is disgust. In explaining disease avoidance behaviour, Curtis (2007b) asserts that science is actually explaining what was already known as a “gut instinct” that disease is caused by dirt.

Drawing on comparison from the natural world, Curtis (2007b) sees disgust of dirt as part of human nature which is influenced by evolution; hygiene being seen as automated rather than higher level thinking. Unlike Douglas, (1966) Curtis does not see culture as the driving force behind this behaviour; disgust exists to produce avoidance of elicitors and as such contamination. This thinking and level of response will of course have implications for the healthcare worker and the nursing role as nurses are required to act against the automated response of avoiding contamination as their role can involve contact with potential contaminants as asserted in Chapter 2.

In more recent work Curtis et al (2009) identified disgust as playing a significant part in some hygiene behaviours. Disgust is seen as an easily explained motivator for certain practices for example handwashing; hands contaminated with faeces are particularly disgusting and repulsive and need to be washed (Whitby et al 2006, Curtis et al 2009, Curtis et al 2011). However this behaviour is so complex it is difficult to compartmentalise the underlying driving forces. The current study’s findings demonstrate that such behavioural responses are multifaceted and cannot be attributed
to any one set of explanations. If this response leads to the correct procedures and appropriate behaviour being carried out in terms of patient care then it would not need addressing further. However this behaviour is not always ‘correct’ and may in some instances be identified as harmful.

5.3. Rationalizing dirt related behaviours
Chapter 4 also identified that the theme “Rationalizing dirt related behaviours” consisted of three component parts. In this section each part will be discussed individually with an overall summary provided at the end of the section.

5.3.1 Rationalizing and rationalizing the irrational
For the participants in the current study it seemed important that their own good practice and presentation was acknowledged in the first instance before any further discussion regarding inappropriate behaviour or less desirable practice could be considered. This presentation of self in the initial stages of the interview has some links with Goffman’s (1956) work on presentation of self in everyday life; a concept which will be discussed further. Goffman (1956) discusses how those providing a service present themselves in their role and give a particular impression. For Goffman this presentation is used to give a good impression of the service and the part they play in it. For the participants in the current study it seemed important that their own good practice and presentation was acknowledged in the first instance before any further discussion regarding inappropriate behaviour or less desirable practice could be considered.

Furthermore whilst identified infection simplified behaviour because the rules were clear and protection was needed against harmful micro-organisms (Whitby et al 2006), where there was no actual identified infection participants rationalized their behaviour as protection from the unknown and the unpleasantness of dirt.

Having given this presentation of themselves it then became apparent that despite their reports of correct procedures at all times, they did not always carry out policy when they identified a risk to themselves. This change to procedure was then rationalized so participants could maintain the perception that their practice was in keeping with policy and infection control. Their presentation that they fully complied
with policy seemed to be the default position. Only when behaviour was examined much more closely did the “what I say I do” and the “what I really do” become differentiated. This difficulty with self reporting behaviour has been widely documented, particularly in relation to infection control (Jenner et al 2006). Good practice is consistently reported even in the face of evidence to the contrary and reported behaviour and observed behaviour are often at odds with each other. However the current study is strengthened by the use of vignettes which can reduce socially desirable responses (Hughes and Huby 2002). By allowing participants to discuss their own practice, the practice of others and the vignette character, some of the potential for the disparity between actual and reported behaviour may have been eradicated.

5.3.2 Rationalizing or condemning irrational behaviour in others

Participants reported that they themselves had never been guilty of any irrational practices, although it has been demonstrated that espoused practice and actual practice can differ significantly (Jenner et al 2006, Nichols and Badger 2008). They also failed to see the similarities between their practice and the practice of others and they offered different reasons for this behaviour. Participants understood their own behaviour because they knew the reason for it, they were responding to a certain set of external circumstances that justified their behaviour. However the cause of behaviour in others is often attributed to more internal factors, such as ignorance or laziness (Morrow et al 2011). They also suggested that in some instances healthcare workers are only really paying lip service to any form of infection prevention by carrying out some form of practice that is either incorrect or incomplete. The actual process is not being thought through and there is an appearance of correct behaviour but only on a superficial level. The early work of Roth (1957) considered infection control practices that were not based on rational scientific evidence but had become a ritual of expected and agreed behaviour. Roth identified that inconsistencies in practice, both in compliance and correct usage, rendered the practice to be of no benefit at best and a risk at worst. The participants in the current study clearly saw the incorrect wearing of protective clothing not only as symbolic and self protecting, but also as a vehicle to increase the risk of infection and poor practice.
Furthermore the participants in this study rationalized any inconsistencies in their own behaviour by explaining that while they acknowledged there was no infection risk and scientific basis to their actions, they were in fact protecting from dirt and uncleanliness, which is unpleasant and unknown. They also articulated how other’s behaviour was based on a scientific rationale, when in fact it was not required. Where participants themselves had acted in the same way, they accepted that their behaviour was based on an avoidance or disgust of others rather than a scientific rationale; they did not however recognise the same level of thinking in others and the attribution of behaviour differed (Morrow et al 2011).

This perception of what others are doing and the risk they pose has some echoes of the work on responses to risk in society by Joffe (1999). Joffe (1999) considered the concept of the ‘other’ in terms of risk. However, while like Joffe (1999) the participants see the patients as ‘others’ who are vulnerable and the cause of disease; they also perceive a risk to themselves from these ‘others’. This risk, which may be perceived through contact with dirt, uncleanliness and the unknown, and the behaviour which ensues once this risk is perceived, shows comparisons with the concept of ‘others’. In this theme there are three distinct groups; self whose practice is rational or can be rationalized, and the ‘others’ who in this instance are both staff members and the patients.

In Joffe’s (1999) view, risk of infection is normally perceived to be higher for others and underestimated in relation to self. Crucially, however, for healthcare workers, some infections reported in the media do not fit into the concept of ‘the other’ or ‘otherness’. Media reports, particularly those focusing on contagious diseases found in one’s own local hospital, centre on the premise that you, personally, could be affected rather than some ‘other’ person (Washer and Joffe 2006). If the media reports something from an, ‘it could be you or me stance’, the relatedness to self increases and this ‘others’ way of thinking is ousted by the relevance to self (Washer 2006). In the current study, risk to self from others was highlighted rather than risk to others from the participants. The participants in this study have provided an explanation for their own behaviour and have shed light on the behaviour of other nurses. The next component draws more significantly on the impact that patients have on this behaviour.
5.3.3 The display of practice: is it all a show?

The display that participants describe, where nurses under patient scrutiny are putting on a show of knowing what to do, giving the right impression, and carrying out the correct procedures has resonance with the work of Goffman (1956). Goffman suggests that any individual playing a part is asking the audience to take the impression they are giving seriously. The audience is asked to accept that the actor has the attributes the performance suggests and the task they are performing has “the consequences that are implicitly claimed” (p28). This behaviour may however be nothing more than a show, especially if the performance is not based on evidence and best practice, but a desire to please or reassure the audience.

However the data in this study also suggests that wearing gloves as a part of the display, particularly when not required, could be interpreted by patients as a sign that they were dirty. Gloves, aprons and uniforms and their symbolic reference have been previously noted (Douglas 1966, Twigg 2000, Van Dongens 2001) with both Twigg (2000) and Van Dongen (2001) acknowledging that gloves can symbolically say to the patient “you are contaminated”. It was recognised by both these authors that care should be taken not to cause offence and that workers often felt guilty about using protective clothing because of the connotations attached to it. Twigg (2000) concluded that both nurses and care workers use gloves to protect against this pollution and this has been demonstrated here in relation to the classifications of dirt and the potential contact with dirt. Nevertheless while Twigg (2000) concurs with Douglas (1966) that this protection may go beyond hygiene and may actually be more to do with professional barriers, this was not a consistent theme in these findings where only one participant mentioned looking professional and maintaining professional boundaries. The findings from the current study strongly suggest that one of the prime reasons for glove wearing was to demonstrate and provide an impression of a knowledgeable practitioner.

When considering what else effects the patients’ perception and impression of hospital care participants felt that the media played a role in this. While it was accepted that patients were becoming more informed the media was considered unbalanced and not necessarily helpful in providing accurate and reliable information. Joffe (1999), Moscovici (2000), and Washer (2004) have all commented on how the
mass media have influenced shared beliefs and how, in their efforts to present reality, the unfamiliar becomes familiar. Stories regarding hospitals, cleanliness and infection are popular in the press and the impact these stories have on the general public cannot be underestimated, especially as such stories usually have negative connotations and outcomes. According to Joffe (1999), in her work about risk and ‘the other’ the media and its simplified interpretation of events and thrilling slants, which strive to maintain attention, play a significant role in the development of a social representation, a key process of which is the transformation of expert knowledge into lay thinking. Washer and Joffe (2006), who examined four national Sunday newspapers over a ten year period, also comment on how in the early media coverage of MRSA, while there was some reference to the dedication of nurses, there was also an emphasis on how the hygiene practices of nurses and healthcare staff were lacking. Blame was attributed in some measure not only to nurses, doctors and cleaners but also to government policies which were sometimes held responsible for the lowered staffing levels which reduced the amount of time that can be devoted to hygiene standards. However, while healthcare workers are in some ways excused by the general population and the media for their poor practice, because of shortcomings in the system, they are ultimately identified as a significant cause of infection spread.

In this study participants reported being very aware of the patients’ scrutiny, and a culture where patients are actively encouraged to question practice, as seen in the “Clean your hands campaign” (DH 2004, NPSA 2008), may be uncomfortable for some healthcare workers. The desire to satisfy the patient’s scrutiny may take precedence over rational thought and common sense. Nurses, who inappropriately use infection control measures confidently, may in fact be playing a part. By asking the audience to believe that they are someone who knows the subject and who takes the correct actions to prevent infection spread, they are asking them to believe that they know and understand that rationale. The individual or actor may be completely taken in by the act or conversely may be cynical about it while still carrying it out (Goffman 1956).

According to Goffman (1956), while there may be some movement between cynicism and sincerity, self illusion can be maintained to a certain extent. Each of the participants in the current study had a presentation of themselves that they were trying
to convey. They presented themselves somewhere between ‘I am a good nurse, I know the rules and I carry them out’ and ‘These rules do not help, I do not know why I do it, at least I look as if I am doing something’.

For Goffman (1956), professionals or those providing a service demonstrate movements and a demeanour that gives a sense of proficiency. Goffman (1956) suggests that performers are taken in by their own performances and are convinced that their reality is the only true one. They are in effect becoming their own audience and this behaviour may be continued in private rather as if the performer is aware of an unseen audience who will criticize variation. While this may lead us to consider teams who as a whole may stage a performance even when there is no audience to see them, when considering nursing teams, they have a readily available audience for the majority of the time. Their actions are constantly observed by an audience made up of patients, who are often new and have not seen the show before, and other disciplines within the clinical setting, although they may not all be convinced by the performance. A nurse putting on apron and gloves is sending a message, ‘I know what I am doing’, but not everyone within the audience may be convinced by the performance. While those without the informing knowledge, for example patients, may be comforted by the actions, other observers with more accurate scientific knowledge may in fact be horrified by the behaviour. The audience is then divided into those who believe the performance and the message it is giving, and those who recognise the action, but are not convinced by the performance.

5.3.4 Summary of rationalizing
It is evident that the participants in this study were keen to give a good impression to the researcher and present themselves as knowledgeable practitioners, although the data revealed that they did not always report following procedure and policy. Participants clearly demonstrated how they rationalized their own behaviour while not recognising this in others. Others’ practice was explained as being at a superficial level and part of a show or display. However participants were also found to be giving a presentation of themselves and they did not want to be found wanting, they were convinced by their own performance but not by the performance of others. Patient scrutiny increased the need to present a show that was convincing to patients and gave some reassurance again that the practitioner was knowledgeable.
5.4 Transitions in place and role

Finally, the theme “Transitions in place and role” consists of two component parts. In this section each part will be discussed individually with an overall summary provided at the end of the section.

5.4.1 Where is the dirt?

When considering the cleanliness of hospitals participants discussed how the ward should appear and how the bed area should be cleaned and prepared for a new patient. This has a semblance to setting the scene, and while the show has been discussed previously, this behaviour of ensuring the area is clean could be likened to setting the stage for the show. Participants felt that the public see any sign of dirt as a failure to maintain cleanliness and perhaps an indication again that hygiene is not taken seriously. Dirty equipment was also reported by participants to give the impression that there was a lack of care regarding cleaning and that cleanliness was not a priority. This further supports the notion that nurses believe the patients are watching their practice and measuring it against a perceived required level, reflecting the work of Whitehead et al (2007), who explored factors that influenced patients’ perception of cleanliness in an acute hospital and found that staff appearance and behaviour were significant indicators.

According to Whitehead et al (2007) these factors, along with physical cleanliness, affected patients’ perceptions of the environment with a dirty environment reflecting a lack of professionalism and indicating the low level of care patients were likely to receive. Whitehead et al (2007) felt that their high rate of response from patients regarding staff behaviour and practices indicated that patients were particularly observant. How staff worked and how they behaved was important to patients and they were judged accordingly. Patients in Whitehead et al’s study (2007) made decisions about how well an area was cleaned and how much staff conformed to the practices required for reducing infection. Inconsistencies in practice created a poor impression and negatively affected the perception of cleanliness.

In the current study, smell, which has played an important role over the centuries in our understanding of disease and transmission (Barnes 2005) was also identified as a
factor that influenced patients’ perceptions of hospital cleanliness. A clinical type
smell did offer reassurance to some even though it was not a guarantee of cleanliness.
For participants there was also a consensus that dirt and germs in the home were more
known and as such seen in a different context from dirt and germs in the hospital.
Therefore it is apparent from these findings that the hospital has unfamiliar dirt and
germs which would be out of place in the home or out of the system as Douglas
would assert (1966). For the participants, dirt in the home is normal dirt and
acceptable because it is known. What is evident is that while hospitals may be cleaner
generally, the potential for contamination from others’ dirt and body waste was far
greater there.

5.4.2 Transition in place: practice and rituals
Participants identified specific rituals that had to be to be carried out on arriving
home, including the correct disposal of uniforms and showering to achieve a state of
cleanliness. Uniforms which could contaminate the home had to be removed and
cleaned. The body, recognised now as a vessel for transporting dirt also had to be
cleansed in order to protect the home. This type of ritualistic behaviour has been
considered by, amongst others, Douglas (1966) who used many comparisons and
examples between ‘modern’ and ‘primitive’ living. According to Douglas (1966),
citing comparisons between the Dinka tribe and modern living, very little of our ritual
behaviour takes place within a religious context: our lives are compartmentalised and
so are our rituals. Cleaning activity does not simply fulfil the need to avoid disease;
rather it separates and creates boundaries within the home, for example the bathroom
and kitchen areas. Pollution avoidance is justified by danger, the danger of disease
transmission through micro-organisms; although behaviour may not be based just on
this.

According to Douglas (1966) the difference between us and the “primitive” Dinka is
that their behaviour is based on symbolism whilst ours is based on scientific fact.
However, our behaviour, particularly complex behaviour, may also carry symbolic
meaning, although the scientific and symbolic meanings are rarely considered
together, being viewed as having separate meanings. Douglas looks beyond modern
thinking that can be traced to germ theory, knowledge of disease transmission and the
concept of hygiene or aesthetics. Douglas claims that if we look to behaviour and
perceptions of dirt before this, we will uncover the perception of dirt and behaviour based on the symbolic nature of dirt. For Douglas dirt becomes simply matter out of place and we respond in the way we do because it is outside the normal classification system. Removing the uniform may be a response to pathogenicity or it may symbolically be saying this is not the place for this, it is out of place and therefore classed as dirty requiring pollution rituals.

There is no reason to suppose that rituals carried out in private and public are the same, and while rituals do exist in both the home and the hospital, the purpose of these rituals may be different. In the hospital the rituals may be deemed to protect self and perform part of the show for the patient audience, while in the home the rituals are concerned with protecting the home and family; this may be a continuation of the show, a genuine belief that the rituals will keep the home safe, or a combination of both.

Most participants felt that there was some risk of dirt and germ transmission attached to their work clothes and they took precautions to varying degrees. None of the participants had hospital laundry facilities so clothing and uniforms had to be washed at home. Although there is evidence to suggest that effective temperatures are not achieved in home washing (Larson et al 2004) and that tumble drying could actually achieve the required temperature (Patel et al 2006), none of the participants mentioned any special washing measures with regard to temperature. Additionally, while employers may advocate home washing (DH 2007b), there was no evidence from the participants that any checks were carried out to ensure adequate temperatures, the consequence of which could be that any bacteria on the uniforms would survive the home washing and continue to be a threat (Neely and Maleys 2000, Patel et al 2006).

Furthermore although hospital clothing was recognised as a threat to the home, participants did not express any desire to remove their clothing prior to their journey home. At that stage they did not conceive that the uniform could be any threat. Unlike Jervis (2001), who discussed how one participant noticed she had taken pollution from the workplace when she smelled urine on herself as she travelled home, the participants in this study did not at this stage readily identify that they had taken on
any pollution. The urine smell symbolises excrement which is out of place (Douglas 1966) and potentially polluting. Jervis (2001) recounts how she herself had been instructed to carry out what she described as not just a hygienic precaution but also a “rite of purification” (p89), by bathing and laundering her uniform on arriving home in order to protect the family. This according to Jervis (2001) lends credence to Douglas’ (1966) notion that once pathogenicity and hygiene have been accounted for we are left with dirt, matter out of place that must be dealt with. In the current study any matter out of place which needed to be dealt with was not recognised as such until the participants reached home, only then did their status change from clean to dirty.

5.4.3 Summary of transitions
Petersen and Lupton (1996) suggest that the links between urban and domestic conditions and health status have gone beyond the control of odour, dirt and infection. They see the environment as representing a wide range of places including the home, the workplace and the city. People see themselves positioned differently within the environment depending on the context of the risk; they can either be at risk or be the cause of the risk. Risk is seen as a continuum which ranges from the risks which are out of their control to those that are purely their responsibility to manage. The current study has identified a change in role and environmental place of the healthcare worker that can be seen in terms of a transition. In the hospital healthcare workers are at risk, the risk is caused by others and is primarily out of their control, although they can take measures to reduce the risk. On leaving the work place their perception of themselves does not change significantly throughout their journey until they arrive home. At this end point of their journey a transition has occurred; they are now the risk and as such see themselves as culpable.

5.5 Discussion summary
This study has identified three main themes from data analysis and has provided explanations for the behaviour under consideration. It has discussed reported behaviour and offered new insights into why this behaviour is occurring and what influences it. Explanations have been given for the behaviour under consideration and the discussion examines how the findings can be situated within the existing literature.
The work sought to explain nurses’ reported infection control behaviours and significantly this study found that much of the behaviour observed is best understood as a response to dirt and not infection. This response is influenced by a number of significant factors. Dirt maybe best understood as a socially constructed phenomenon, perhaps influenced by evolution. Disgust is a natural response to dirt and can be a motivator that influences behaviour. Chapter 6 now considers the implications of these findings and recommendations for change and further research.
Chapter 6
Conclusions and Recommendations

6.1 Conclusions

This study is the first of its type to explain nurses’ reported infection control behaviours beyond policy and education, through gaining an insight into what else influences behaviour and how nurses view the risk from infection and dirt. Unlike Whitby et al (2006, 2007), Pettit (2000, 2002), and Pettit et al (1999a, 1999b, 2002, 2004), who focused primarily on hand hygiene, this study considers a wider range of infection control behaviours. It identifies three main themes: how nurses classify dirt; how they rationalize dirt related behaviours; and how a place and role transition occurs. Much of the reported behaviour takes a ritualistic role with acts and behaviours carried out being part of a protective self defence system that is not fully explained by a rational ‘scientific’ understanding of infection control. These behaviours are not necessarily carried out to protect themselves from infection; nurses do not necessarily fear contagion from infection, rather they are protecting themselves from dirt. If a patient has an identified infection then there are set policies and guidelines which can be adhered to. However, regardless of whether there is infection there is always dirt. There is the threat of contact with dirt and germs from patients, particularly unknown patients. Protection practices, which, on the surface, may appear to be infection control practices, must be carried out to guard against this threat. Furthermore there is a natural response to disgust and some behaviour merely reflects this. The behaviours of other staff are viewed differently from the behaviour of self; others carrying out inappropriate behaviours are seen as irrational, whereas own reported behaviour is rationalized.

Many of nurses’ infection control behaviours may best be understood as part of a ‘show’, demonstrating similarities with the work of Goffman (1956), being influenced by patients’ increased awareness of practice and the nurses’ desire to be seen as someone who knows the correct procedure. Department of Health campaigns (DH 2005) proclaiming infection control is ‘everybody’s businesses’ have encouraged patients’ observations and the response to these observations has become part of the show. A picture or representation of practice has been created where participants are aware of patients’ scrutiny and the desire to satisfy this has taken precedence over scientifically rational infection control theory. This acting outside scientific rationale
can be seen as ritualistic, as the behaviour is carried out despite knowledge to the contrary. Despite the adherence to recommended practice based on the scientific rationale that all participants were keen to demonstrate they understood, there was also the belief that these rituals could protect the participants. This is clearly demonstrated by the rationalization of such behaviours.

A journey taken by healthcare workers was identified through which their role and status changed. In the hospital environment their self perception was that they entered as clean and they remained clean through their performance of both clinically based practice and rituals. Only when they returned home did they recognise that despite their practice they could have become contaminated. A transition occurred from clean to dirty on entering the home. Rituals were carried out, uniforms removed and put into specific places, washed according to their ‘rules’ and the body purified. Rituals in the home differed from those carried out in the hospital as they served different purposes: one to protect the self from the hospital and the other to protect the home from a contaminated self.

6.2 Strengths and limitations of the study
This study has given a representation of nurses’ behaviour in relation to infection control and provided explanations as to why this behaviour is occurring. The use of vignettes is a strength of the study allowing informed insiders to discuss behaviours in the third person. Participants acknowledged that they recognised the behaviours of others in the vignettes thus increasing credibility. In doing this they can in effect discuss others behaviour rather than acknowledging their own. Reference to practice always produced what participants considered to be the best practice as their own and others’ practice as being irrational. What this study cannot guarantee is that participants’ reported behaviour was truly representative of what happened in practice as practice was not actually observed. The problem of others’ behaviour has been identified; however this study cannot assess the magnitude or prevalence of this behaviour.

While the sample size may be considered small, it was purposeful and was able to provide the information required. What cannot be assured is that all nurses would respond in the same way. Member checking and the use of a second researcher to
confirm themes played an important role in validity, credibility and auditability (Lincoln and Guba 1985). Validity is further improved as the study aims and the interviews were guided by an extensive literature search and a theoretical framework analysis was used for the data analysis (Ritchie and Spencer 1994). In terms of reliability all interviews were conducted by an experienced interviewer, which contributed to the interviews’ success (Barriball and While 1994).

6.3 Recommendations for practice and future research
That infection control is an essential part of any healthcare worker’s role is not disputed. The Department of Health has long recognised that infection control is a cause for concern in healthcare and needs to be part of all health education, not only for healthcare workers but also for anybody who comes into contact with the healthcare service (DH 2002, 2004, 2006). It has also produced policy over the past decade that addresses the issue of infection control and some targets have been met (NAO 2009). However the Department of Health recognises that infection control remains an ongoing problem and an effective way to combat this costly aspect of healthcare has yet to be found. Nursing bodies also recognise that knowledge of infection control is important, with the Nursing and Midwifery Council (NMC) stating that knowledge of infection control is an essential proficiency for a registered nurse (NMC 2004b). While these standards of proficiency do not detail how that is to be achieved, the subsequent ‘Essentials Skills Clusters’, introduced in 2006 (NMC 2006) for full implementation in nurse education by 2008 (NMC 2007), set out clear requirements for nurse education on the standards that must be achieved throughout any pre registration programme and for entry to the register. These include recognising infection risks and modes of transmission, adhering to legislation and infection control policy at all times and ensuring that others also work according to good practice guidelines. The skills clusters also state that nurses should challenge the practice of other care workers who put themselves or others at risk of infection. This study has identified that nurses do recognise practice guidelines but despite this still make a decision on their behaviour based on their own informal assessment of the patient and their perception of risk of contact with dirt and germs.

Additionally, a Code of Practice was developed as part of the ‘Health and Social Care Act 2008’ (DH 2009) to provide criteria for the Care Quality Commission, an
independent regulator of health and social care, to judge performance. This code brings together all policies regarding the prevention and control of infection and refers to all programmes which deal with the education of healthcare workers, namely the ‘Patient Safety Alert: clean hands save lives’ and the ‘cleanyourhands’ campaign (NPSA 2008), ‘NHS Core Learning Unit ‘(NHS 2005), ‘Skills for Care’ (2005) and ‘Introduction to infection control in care homes’ (HPA 2009). The code identifies a statutory obligation for all NHS organisations to provide education in the prevention and control of HCAI and these programmes and campaigns use a variety of media to educate and to demonstrate good, evidence-based practice, including training plans, short films, posters, support and feedback. However, the literature clearly demonstrates that infection control practice, particularly hand hygiene, is poor and while some success has been reported with interventions that include educational programmes, reminders and regular feedback (Pittet et al 2000, Naikoba and Hayward 2001), the problem still remains. However, it is not enough to say education is required, this study clearly demonstrates that it is not education that is lacking, it is lack of insight into practice and behaviour recognition that is hampering sound infection control practice. In discussing hand hygiene Jenner et al (2006) concluded that those who believe their practices are correct will be oblivious to campaigns which aim to change attitudes. Infection control programmes aimed at increasing compliance with policies and guidelines need to include a behaviour modification element alongside education if these behaviours are to be recognised and changed (Jenner et al 2006, Korniewicz and El-Masri 2010).

While the limitations of this study are acknowledged, the identification of behaviour that was reported to occur outside recommended practice based on policy and scientific rationale has major implications for practice. Ritualistic practice in nursing care has been recognised (Wolfe 1986, 1988, Philpin 2002), criticized for many years (Walsh and Ford 1989), and is inconsistent with evidence based practice in health care, currently at the forefront of nurse education.

The participants in this study demonstrated that they had the knowledge and education required to understand the principles of infection control procedures, the transmission of disease and risk of contagion. Participants did not recognise their own behaviour as deviant; only the behaviour of others. Participants’ own behaviour has become
familiar and rationalized such that they no longer recognised it as anything other than correct. Their behaviour exists outside what is taught and accepted as correct. It is insufficient to say that education can change this behaviour; this behaviour (and the reasons for it) has to be recognised first and foremost by those carrying it out before an attempt can be made to change it.

While it is acknowledged that actual practice does not always reflect reported practice and that self reported compliance is higher than actual (Jenner et al 2006, Nichols and Badger 2008) this study has considered both the participants’ reports of practice and practice that they recognised. What it cannot confirm is whether participants, having recognised behaviour in others, fully equate this to their own practice. While this behaviour continues unaddressed and unchecked infection control practices will continue to fail to meet the national expectations and requirements set out by ‘Clean, safe care’ (DH 2008). Infection will continue to be transmitted throughout the hospital setting and in the wider community and costs both financial and personal will remain high.

This study has gone some way towards providing an explanation for inappropriate infection control practice. This complex behaviour requires multifaceted interventions which existing policy and guidance do not completely provide. Current policy and guidance, while providing education and monitoring tools to record and audit infection control practices, do not examine the root cause of non-compliance and inappropriate behaviour. The policies call for a change in culture within the NHS through leadership and education but have not examined why education is failing. What is required now is an education programme that also addresses beliefs and values of healthcare workers and recognises the nature of natural responses. Only by understanding behaviour can it be changed (Caprara 1998), by explaining reactions and responses to dirt and allowing people to express their beliefs and fears, responses will be recognised and can then be compared with the scientific rationale.

A campaign to help healthcare workers recognise their own behaviour is required before new behaviour can be learnt. Nurses behave and respond to situations in ways which they perceive offer protection; the inappropriate use of gloves; the rituals carried out to maintain their own state of cleanliness in the hospital; the informal
assessment they make of patients’ level of cleanliness; the performance they give. A response to disgust is a part of human nature, and patients can and do appear dirty and cause fear in others. However, it is the response that needs be modified or indeed changed in order to fulfil its role in relation to self in a social context as well as the scientific rationale. This is a complex multifaceted behaviour that is influenced by both knowledge of the scientific rationale and the desire to avoid dirt of others and so requires multifaceted interventions. One starting point would be to identify and name the practices and rituals, whether positive or negative, which this study has begun to do. Healthcare workers need to have first identified what they are doing and consider their reasoning behind the behaviour before a suitable education strategy can be adopted. Additionally this naming of practices and recognition of behaviour would begin to give a sense of how prevalent this problem is.

An educational programme that is carried out in conjunction with a behaviour recognition campaign, run on similar lines to the ‘cleanyourhands’ campaign with road shows and posters clearly demonstrating the behaviour that needs to be changed would be a good starting point. Disgust and affiliation have been identified as a motivator that can influence hand washing (Curtis et al 2009, Curtis et al 2011) and these concepts could be incorporated into any such programme. This study has shown that nurses are not aware of the discrepancy between their own practice and practice which meets policy requirements; they lack insight and self awareness and while they may recognise aspects of the ‘show’ they fail to recognise the part that they themselves play in it. In considering workforce development Morgan (2009) draws on the work of Forrest (2008) and proposes that reflection, which has been utilized by the nursing professional for over 20 years to gain knowledge from experience and evaluate action (Schon 1987, 1991, Johns 2000), can also play an important role in developing self-awareness. Rather as the study's participants recollected practice they had seen, reflection allows the practitioner to recall their own actions and experiences, thus enhancing self awareness and allowing own practice to be examined. Reflective sessions or clinical supervision programmes (Driscoll 2000) would allow healthcare workers to firstly express their fears regarding dirt and infection before considering whether their own behaviour actually meets the policy requirements or is in fact not based on the scientific rationale.
Following these interventions an examination of whether beliefs have changed and if practice has improved should be carried out. The aim of any such programme is an improvement in infection control practices with the ultimate overall goal being a reduction in the cost, both financial and physical, that HCAI continue to cause.

This study has indicated that nurses responded to disgust and that some behaviour regarding protection and perception of risk was in response to disgust of dirt and faeces. While this may have evolved instinctively in response to dirt it may also have been influenced by some scientific knowledge. While this may be the case the issue in terms of infection control is that this response does not always lead to the most appropriate behaviour. The behaviour does not always fit with a rational response to infection; it is a response to dirt.

To examine nurses’ responses and perceptions of disgust and disease, a proposal has been submitted to conduct a study examining what changes student nurses go through in disease perception and hygiene practices over the course of their studies as they are exposed to sick people. The author has been asked to contribute to this study by the principle investigator Dr Edward Purssell. It is proposed that student nurses commencing pre-registration courses will be offered the opportunity to participate. Disgust and contamination sensitivity will be measured using the Hygiene Inventory 27 (Hi27) (Stevenson et al 2009) and vulnerability to disease by the Perceived Vulnerability to Disease Scale (PVD) (Duncan et al 2009). These scales have successfully undergone psychometric evaluation in similar populations. The scales will be reproduced and entered onto the SurveyMonkey internet survey site. Data will be analysed primarily by looking for correlations between changes in perception and reported hygiene behaviour. All students commencing a Pre Registration Nursing programme will be asked to complete the two scales at the start of their programme and twice more during their programme. Changes in attitude towards disgust and personal vulnerability will be compared to changes in the hygiene related subscale of the Hi27 over the course of their programme. The principle researcher’s hypothesis is that students will develop a tolerance towards disgust and personal vulnerability to disease, which will result in a change in hygiene behaviour. Because data analysis will be conducted primarily to investigate correlation, a causal relationship will not be established. As this is a convenience sample no attempt will be made to generalise the
results beyond the sample. It may however, inform future studies where these will be possible.

Finally, the scrutiny of patients has been reported in this study as one component that affects behaviour. While the intention of making infection control everybody’s business (DH 2005) was to enhance practice this scrutiny may inadvertently be affecting nurses’ behaviour in a negative way. This study has only interviewed nurses and it would be worth examining patients’ perception of nurses’ behaviours, how much they observe and direct the show, and ultimately whether they are convinced by it.
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Pittet, D. (2000) Improving Compliance with Hand Hygiene in Hospital. Infection Control and Hospital Epidemiology, 21, 6, 381-386.


Skills for Care (2005) Knowledge set for infection prevention and control. Skills for Care, part of Skills for Care and Development, the sector skills council for social care, children and young people. www.skillsforcare.org.uk


Carole Jackson  
1.21a James Clerk Maxwell Building  
57 Waterloo Road  
King’s College London  
London SE1 8WA  

Tuesday 10th October 2006  

Dear Ms Jackson  

CREC/06/07-7 Safety behaviours in infection control practices: can nurses’ infection control behaviours be explained?  

Thank you for sending in the amendments requested to the above project. I am pleased to inform you that these meet the CREC’s requirements and therefore that full approval is now granted.  

Please read the enclosed Notes for Investigators of Approved Projects and the college guidelines on record management. These can be found by accessing the KCL website at http://www.kcl.ac.uk/departments/archives/crecman/bookii0.html and reading Fact Sheet 15 ‘How to manage academic research records’.  

For your information ethical approval is granted for a period of two years, after which point you will be reminded to apply for an extension of approval (please note however that a full re-application will not be necessary unless the protocol has changed).  

Please would you also note that we may, for the purposes of audit, contact you from time to time to ascertain the status of your research.  

We wish you every success with this work.  

With best wishes  

Maggie Newton  
Administrator  
College Research Ethics Committee  

cc. Dr Peter Griffiths
Please complete this form after you have read the Information Sheet and/or listened to an explanation about the research.

**Title of Study:** Safety behaviours in infection control practices: can nurses’ infection control behaviours be explained

**King’s College Research Ethics Committee Ref:**

- Thank you for considering to take part in this research. The person organizing the research must explain the project to you before you agree to take part.

- If you have any questions arising from the Information Sheet or explanation already given to you, please ask the researcher before you decide whether to join in. You will be given a copy of this Consent Form to keep and refer to at any time.

- I understand that if I decide at any other time during the research that I no longer wish to participate in this project, I can notify the researchers involved and be withdrawn from it immediately.

- I consent to the processing of my personal information for the purposes of this research study. I understand that such information will be treated as strictly confidential and handled in accordance with the provisions of the Data Protection Act 1998.

**Participant's Statement:**

I ____________________________

agree that the research project named above has been explained to me to my satisfaction and I agree to take part in the study. I have read both the notes written above and the Information Sheet about the project, and understand what the research study involves.

Signed ___________________________ Date ___________________________

**Investigator’s Statement:**

I _______ Carole Jackson

confirm that I have carefully explained the nature, demands and any foreseeable risks (where applicable) of the proposed research to the volunteer.

Signed ___________________________ Date ___________________________
Appendix 3 Information sheet for participants

YOU WILL BE GIVEN A COPY OF THIS INFORMATION SHEET

I would like to invite you to participate in this Research Based Thesis. You should only participate if you want to; choosing not to take part will not disadvantage you in any way. Before you decide whether you want to take part, it is important for you to understand why the study is being done and what your participation will involve. Please take time to read the following information carefully and discuss it with others if you wish. Ask me if there is anything that is not clear or if you would like more information. If you do decide to take part, please let me know beforehand if you have been involved in any other study during the last year.

Safety behaviours in infection control practices: can nurse’ infection control behaviours be explained

This Research Based Thesis represents the final work of the Doctorate in Healthcare at Kings College, London. The primary aims of the study is to consider if nurses’ infection control behaviours within an acute clinical setting could be explained, gaining insight into the perceptions of risk regarding infection control, the behaviours nurses adopt to reduce risk and what the key determinants are.

The data collection consists of 3 waves using critical incidents and vignettes of observed practice. If you choose to participate in this study we will arrange to audio tape a short interview where your views will be sought and you will be asked to discuss a practice you have observed or consider a vignette of observed practice. The interview should last approximately 20-30 minutes; following transcription and data analysis you will have the opportunity to review the transcripts from the interview to check for clarity and meaning. It is anticipated that the interviews will take place in a private office within James Clerk Maxwell Building.

Neither you, nor your work area, will be identified on the tapes or transcripts and anonymity will be assured in the final report. Transcripts will be kept secure at all times and retained for 7 years. Audiotapes will be wiped following transcription.

Should you need further information regarding any part of the study please phone Carole Jackson on 02078483562 or 07956441063

It is up to you to decide whether or not to take part. If you do decide to take part you will be given this information sheet to keep and be asked to sign a consent form. If you decide to take part you are still free to withdraw at any time and without giving a reason. If you do not wish to participate you do not have to give a reason for this. I would be grateful if you could contact me regarding your decision although you are under no obligation to do so.

The final report is due for submission during 2008 and written information regarding the findings of this investigation will be made available to you at this time.

In the event of you suffering any adverse effects as a consequence of your participation in this study, you will be compensated through King’s College London’s ‘No Fault Compensation Scheme’.

Carole Jackson
1.21a JCMB ex 02078483562
Appendix 4; Vignette Wave 2

Vignette 1
This is a snapshot of activities on a general medical ward. The ward is divided into 3 bays with 8 beds in each bay.

In bay one the beds are being made, both staff members are wearing gloves. One wears the same gloves for the whole bay (participant 4), the other wears double gloves and after 4 beds removes the outer pair and continues to make the remaining 4 with one pair on (participant 3).

In the next bay a patient with psoriasis needs a heavy covering of cream to be applied daily. This is being carried out by a nurse wearing gloves. It’s a long process and the nurse has to keep going for more supplies. She keeps the gloves on while doing this and there are now smudges of cream on the curtains around the bed (participant 2 and 6)

In bay three the ward round has just started, half the doctors are wearing white coats, none of them use gloves or gel before examining the patient nor do they wash their hands (participant 1 and 3).

Finally a patient in a side room has a large abscess on his leg as result of heroin abuse. He is being barrier nursed but he keeps wandering out onto the ward (participant 1 and 7). One on his nurses has a rash on her face which appears to be infected. She has a GP appointment for later in the day.

Vignette 2
This is a snapshot of activities on a general surgical ward. The ward is divided into 4 bays with 8 beds in each bay.

In bay one a female patient has been spiking a temperature for 3 days and has been diagnosed with a wound infection. She is very hot and uncomfortable and has been given a fan. The fan is at her beside. It has some brown marks on the base that look like they might be old blood splashes (participant 4) and the protective grill and fan blades are covered in dust (participant 1).

In bay 2 a patient has been incontinent of faeces and has been wheeled into the large shower in the bathroom to be washed (participant 1). There is faeces on the floor of the ward which seems to have gone unnoticed (participant 3 and 8). The floor itself has been cleaned and polished earlier although there is no strong smell of bleach (participant 5) in fact there never seems to be a smell of antiseptic (participant 5).

In the next bay a nurse is recording the blood pressures of all the patients. She is wearing gloves and an apron which she keeps on for all 8 patients (participant 1). One patient is having a bed bath; her nurse is wearing gloves and an apron to wash her (participant 3).
Appendix 5; Vignette Wave 3

Vignette 1
This is a snapshot of activities on a general medical ward. The ward is divided into 3 bays with 8 beds in each bay.

In bay one the beds are being made, both staff members are wearing gloves. One wears the same gloves for the whole bay (participant 4), the other wears double gloves and after 4 beds removes the outer pair and continues to make the remaining 4 with one pair on (participant 3).

In the next bay a patient with psoriasis needs a heavy covering of cream to be applied daily. This is being carried out by a nurse wearing gloves. It’s a long process and the nurse has to keep going for more supplies. She keeps the gloves on while doing this and there are now smudges of cream on the curtains around the bed (participant 2 and 6).

Finally a patient in a side room has open sores on his leg as result of heroin abuse. The wounds are being left uncovered and the staff suspect he has been picking or at least scratching them. He is being barrier nursed but he keeps wandering out onto the ward (participant 1 and 7).

Vignette 2
This is a snapshot of activities on a general surgical ward. The ward is divided into 4 bays with 8 beds in each bay.

In bay one a female patient has been spiking a temperature for 3 days and has been diagnosed with a wound infection. She is very hot and uncomfortable and has been given a fan. The fan is at her beside. It has some brown marks on the base that look like they might be old blood splashes (participant 4) and the protective grill and fan blades are covered in dust (participant 1).

Outside bay 2 visitors are waiting to go into see a patient. Just in front of where they are sitting there is some faeces on the floor which seems to have gone unnoticed (participant 3 and 8). The floor itself looks clean and polished although there is no strong smell of bleach (participant 5). The visitors are staring at the faeces but the staff keep walking past it.

In the next bay a nurse is recording the blood pressures of all the patients. She is wearing gloves and an apron which she keeps on for all 8 patients (participant 1). One patient is having a bed bath; her nurse is wearing gloves and an apron to wash her (participant 3).
Very interesting what you said about if you were washing your own child you
wouldn’t wear gloves. And some people have said to me that if they washed a
stranger, they might wear gloves. But if they washed a member of their family, they
wouldn’t.

That is because of familiarity isn’t it, so a stranger is somebody you meet for the first
time. But if it is your own child, then it is a familiar thing. So because you’re
familiar, you know the person, you know them day in, day out. Like if I have client
who I know day in, day out, then I know who the person is. KUK

That’s very interesting, isn’t it?

Yes. So if I’ve been attending to their hygiene needs, I know the client is clean. I’m
washing every day, so after a month or maybe after a few days, I know the person’s
hygiene standards. So what it is necessary to do for me I know, he’s now a known
client to me, he’s no longer a stranger. So therefore, so that familiarity is what also
can determine the type of universal precautions and also the type practice and
intervention I would be going for. KUK But if I’m not familiar then I would have
doubts, and then this doubt would tell me that the best way forward is protecting
yourself. And that is to put on the gloves. If they ask you what you’re doing that you
have got to explain clearly. I don’t know you I am meeting you for the first time I’m
quite happy to help you, give you a nice wash, do everything,’ so therefore I think
it’s fair enough for you. KUK

So as you get to know somebody, your perception of the risk from them
reduces? Or?

Yes providing there are no more new events or new incidents that would show up or
any harm or anything, cuts or anything. Then it doesn’t make no difference. I
would just carry on like any familiar person and giving like to somebody like a
family member. KUK
<table>
<thead>
<tr>
<th>The classifications of dirt</th>
<th>Transitions of place and role</th>
<th>Rationalizing dirt related behaviour</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>DUI</strong></td>
<td><strong>KUK</strong></td>
<td><strong>PLH</strong></td>
</tr>
<tr>
<td>P10</td>
<td>And she always said ‘Oh I do this in case I reach into the bed and find something nasty. 10 (1.24) suspicion of dirt DUI-DU* 10 (1.24) protect yourself if there is a suspicion of dirt. DUI-DU*</td>
<td>No it’s alright, but then, but I think everybody has a different view on babies’ nappies anyway, because baby poo is baby poo isn’t it, and it’s not a problem because everybody has one, 10 (13.19) KUK-AF 10 (13.19) faeces from a baby is not a problem to anyone KUK-AF</td>
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<td></td>
<td>I don’t know really. I mean if they – if a patient had come out and gone and touched the wound or had faeces on his hand. You don’t know what they’ve got on their hands, do you? And, you know, you can see it and he came up and hugged you, then that, then it’s a more obvious threat to you, I suppose. 10 (5.44) DUI-DU* 10 (5.44) protect yourself and take action if you think you have been subjected to dirt, especially if a patient has touched you they may have touched their wound or faeces DUI-DU*</td>
<td>But then if I’d come home from a shift, having not had a shower, I wouldn’t go and change the baby’s nappy, I wouldn’t change the nappy because I wouldn’t want to put them at risk, 10 (13.29) KUK-AF 10 (13.29) there is no threat from children’s faeces or from children within the family, KUK-AF/AF</td>
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<td></td>
<td>I get home after a 13 hour shift, is go and have a shower anyway. And I always, I do because I don’t want to bring anything in. But the probability of that happening is so small, because I know that I’ve washed my hands, and I know that I’ve worn aprons, so I haven’t got anything on my uniform. And, you know, I haven’t been thrown up over or peed on or anything like that. But yes, I think, in my back of my mind, I do sort of consciously think, ‘I need to get clean first.’ 10 (12.15) DUI-DU* 10 (12.15) protect yourself from dirt and get clean if you suspect you have been subjected to dirt DUI-DU*</td>
<td>But otherwise, I mean I wouldn’t, if I knew a patient, knew the psoriasis was an ongoing condition, just needed, she couldn’t reach her ankle maybe or whatever, then I would not wear gloves. 10 (2.34) KUK-KP 10 (2.34) I wouldn’t wear gloves to put cream on a patient I knew KUK-KP</td>
</tr>
</tbody>
</table>
| | There is the thing about, you know, making a patient feel like a leper, you know, ‘Oh you can’t come near me without wearing gloves because you’re going to catch something from me.’ And I think in most cases it’s really nasty to make people feel like that. 10 (10.22) DUI-PT 10 (10.22) protective behaviour and wearing gloves can make patients feel dirty DUI-PT | Yes, it’s the same with babies’ nappies are different to, you know, cleaning up somebody, a healthy adult. 10 (13.13) KUK-AF 10 (13.13) cleaning up babies faeces is different from cleaning up adults KUK-AF | And in some incidences, you know, obviously, quite often our patients have multiple problems and are infectious. If they are needing a bed bath, they’re usually quite poorly and quite likely to have some other infectious problem going on. So wearing gloves in that instance is, you know, is sensible,
### Mapping across Classification of Dirt theme

<table>
<thead>
<tr>
<th>P10</th>
<th>DUI-BC</th>
<th>DUI-SS</th>
<th>DUI-DU</th>
<th>DUI-PFD</th>
<th>DUI-PFD-PB</th>
<th>DUI-PFD-HO</th>
<th>DUI-PT</th>
<th>DUI-HAD</th>
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<tbody>
<tr>
<td>10 (1.24) protect yourself if there is a suspicion of dirt DUI-DU</td>
<td>10(5.44) protect yourself and take action if you think you have been subjected to dirt especially if a patient has touched you they may have touched their wound or faeces DUI-DU</td>
<td>10(10.22) protective behaviour and wearing gloves can make patients feel dirty DUI-PT</td>
<td>10(10.30) protective behaviour and wearing gloves can may offend patients DUI-PT</td>
<td>10(6.35) hospital and equipment can be dirty even if it's not obvious there are germs dust and skin cells around DUI-HAD</td>
<td>10(7.8) dirt and stains are not attractive and give the wrong impression DUI-HAD</td>
<td>10(7.14) any sign of dirt gives the impression that everywhere is dirty and worries the patient DUI-HAD</td>
<td>10(7.36) dirt can be anywhere is a hospital even in flower water DUI-HAD</td>
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### Dirt and unclean as opposed to infection

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<tr>
<th>DUI-BC</th>
<th>DUI-SS</th>
<th>DUI-DU</th>
<th>DUI-PFD</th>
<th>DUI-PFD-PB</th>
<th>DUI-PFD-HO</th>
<th>DUI-PT</th>
<th>DUI-HAD</th>
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<tbody>
<tr>
<td>When infected behaviour is clear</td>
<td>When suspicious better to be safe than sorry</td>
<td>Suspicions that there is dirt there and uncleanliness</td>
<td>Protection from dirt</td>
<td>Protective behaviour</td>
<td>What happens in the home</td>
<td>What patients think</td>
<td>Hospitals are dirty</td>
</tr>
<tr>
<td>KUK</td>
<td>KUK-FA</td>
<td>KUK-UK</td>
<td>KUK-KP</td>
<td>KUK-AF</td>
<td>KUK-HD</td>
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<tr>
<td>P10</td>
<td>10 (13.5) your own germs at home are less threatening because you know where they have come from KUK, also talking about cleaning the toilet KUK-HD</td>
<td>10 (13.29) there is no threat from children’s faeces or from children within the family, the threat is from you when you change a nappy if you are not clean KUK-FA/AF</td>
<td>10(2.34) I wouldn’t wear gloves to put cream on a patient I knew KUK-KP</td>
<td>10 (13.29) there is no threat from children’s faeces or from children within the family, KUK-FA/AF</td>
<td>10 (13.5) your own germs at home are less threatening because you know where they have come from KUK, also talking about cleaning the toilet KUK-HD</td>
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Mapping across Known and unknown dirt theme

<table>
<thead>
<tr>
<th>KUK</th>
<th>Family members</th>
<th>Children are different</th>
<th>Unknown patients</th>
<th>Known patients</th>
<th>Faeces is age related even if known</th>
<th>Dirt in the home is more known</th>
</tr>
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<tbody>
<tr>
<td>KUK-FA</td>
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<td>KUK-CH</td>
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