

**A comparison of the factors which
influence infection control
in paediatric wards
in England and Thailand**

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ABSTRACT

Acquiring an infection during a hospital stay is a hazard for patients throughout the world. Over 1.4 million people worldwide are suffering from infections acquired in hospital. Five to ten per cent of patients admitted to modern hospitals in developed countries acquire one or more infections, whereas patients in developing countries have a higher risk, around two to twenty times this figure. Paediatric patients, especially neonates and infants, have an additional risk of infection because of their compromised immune system. The purpose of this study was to explore the factors which contribute to the spread of infection among children in paediatric wards in a developed and a developing country: England and Thailand.

Method: An ethnographic approach was utilised to identify practices which promote or prevent the spread of infection in each country. Purposive sampling was employed to recruit ten nurses in England and ten nurses in Thailand. Ethical approval was obtained from De Montfort University (DMU), National Research Ethics Service and the ethical approval committee in Thailand. Non-participant observations and semi-structured interviews were the main methods of obtaining data in clinical settings. Data from the observations and interviews were transcribed and coded using thematic content analysis.

Results: Hospitals in Thailand and England faced the same problems regarding attitudes, values and beliefs which contribute to infection control difficulties in children, particularly poor hand hygiene. Good attitudes and beliefs will promote good practice. Moreover, education and training can raise perceptions and promote good practice. However, in terms of different cultures and circumstances, the key factors explaining different implementations between the two countries are resources, lifestyle, and religion.

Conclusion: Even within the same hospital, different backgrounds including education, cultures, policies and support result in different factors which impact

on paediatric patients. Individuality and personal responsibility for infection control practice are the most significant factors influencing compliance with best practice.

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CHAPTER 1: BACKGROUND TO THE STUDY

1.1 Introduction

This chapter gives an overview of the thesis and discusses the research rationale, aims and objectives. It also outlines the structure and content of each chapter within the thesis.

1.2 Aims of the study

The main question to be addressed within this thesis is: are there different factors which influence infection control practices in paediatric wards in England and Thailand? The research aims emerged from the research question as a result of reflecting on my experiences in children's nursing practice and my understanding of the literature review.

The aims of the study are:

- to identify the factors which influence infection control practices in paediatric wards in England and Thailand
- to compare the factors identified in both countries in order to make recommendations for best practice.

1.3 Background to this study

This thesis focuses on the factors which influence infection control practices in paediatric wards in England and Thailand. Thus, in this section I will describe the background of healthcare associated infections (HCAIs), the current situation regarding HCAIs, why I was interested in studying this topic, and why I adopted a comparative approach to this study.

Filetoth (2003) describes HCAIs as infections resulting from contact with the healthcare system or as a result of healthcare interventions. HCAIs include both hospital acquired infections (HAIs) and community acquired infections (CAIs).

HAIs are infections which develop in patients 48 hours or more after admission to hospital. Meanwhile, CAIs refer to infections from which the patient is suffering upon admission or develop within the first 48 hours of admission to hospital.

Rates of infection vary between countries and within the same country depending on resources, caregivers and healthcare staff, and patients' socio-economic situation (Vaxholm 2006). In the United Kingdom (UK) HCAs is a major concern because many of these infections are serious and sometimes fatal. According to the Health Protection Agency Report (2007), HCAs not only result in high patient fatality rates but also create many problems, inevitably including an increase of personal healthcare costs. A patient with an HCAI costs approximately three times more than an uninfected patient, equivalent to an additional £3,000 per case (DH 2005). The National Audit Office (NAO) estimated that HCAs contribute to the death of up to 5,000 patients in the UK each year and cost the NHS up to 1 billion pounds per year, whilst the majority of problems associated with HCAs in developing countries and undeveloped countries are different.

The severity of financial and personal cost of HCAs depends on how long the patient has been admitted to hospital. Delayed discharges equate to lost bed days for the Trust and loss of income. For example, the expenses regarding antibiotic therapy, extra equipment, personal protective equipment, and room and bed services are increased. (Weston 2008). Thus the economic consequences to the National Health Service (NHS) in the United Kingdom are considerable.

HCAI is caused by several factors. A wide variety of micro-organisms can be transmitted to patients in healthcare settings at any time during a hospital stay. In other words, contact with healthcare interventions can allow the transfer of micro-organisms, viruses, bacteria, chlamydiae and other harmful pathogens to patients. This can affect the patient in many ways depending on their virulence,

from increased discomfort and pain to severe chronic illness, permanent disability, fatality, an increased risk of acquiring other infections and increased length of stay in hospital (Dulworth and Pyenson 2004). HCAs can be transferred between people, such as from one patient to another or between patients and healthcare workers, particularly in vulnerable patients.

HCAI not only impacts the government regarding loss of income as mentioned above, but also public concern. Public awareness is important, especially in developed countries where people have easy access to advance technology and media. Many publications report that HCAs have not only become the most common threat to hospitalized patients, and potentially their families, but have also become a major public concern (Arias 2008). The risk of acquiring HCAs has become of interest to the media in the UK because claims of dirty hospitals were recently reported. As a result, the public is losing confidence that the NHS can safely care for them and has placed HCAs at the top of the political healthcare agenda (Pratt 2007).

There is no doubt that HCAs are a major problem worldwide since healthcare systems in both developed and developing countries are affected. However, the burden of disease is different between developed and developing countries and currently limited data exist from developing countries. Some researchers have reported that HCAs in developing countries are 3-20 times higher than those reported in developed countries (WHO 2009; Zaidi et al 2005). However, the rate of HCAs in Thailand was 6.5% and in England was 8.2% (Danchaivijitr 2007; Humphreys et al 2008). Thus it is challenging for all healthcare professionals worldwide to identify an effective policy and to establish practices that decrease this figure.

To combat this problem, infection control teams have been established in order to control and prevent the spread of infection, increasing emphasis on competence to practice within nursing in recent years. Many infection protocols are produced by infection control teams in individual countries by adherence to

The Centers for Diseases and Control (CDC) standards (CDC 2010). The surveillance of HCAs is challenging and reducing HCAs will benefit all aspects of the quality and efficiency of patient care.

One of the difficulties in controlling HCAs appears to stem from poor adherence to infection control guidelines, even the most basic guideline: hand decontamination. Most cross-infection in the hospital and other healthcare settings are spread via the hands of healthcare staff by direct contact between healthcare staff and patients. Hand hygiene is often described as the single most effective way of preventing and controlling the spread of infection (Gould 2009). Several reports identified that some healthcare staff were less concerned about hand hygiene and did not regard the use of gloves or masks as necessary (Sakar 2006). Moreover, there are a number of factors which affect healthcare staff compliance with infection control practice such as work load, infection control guidelines, inadequate knowledge and lack of training. In Thailand, Patarakul *et al.* (2005) found that hand hygiene compliance among healthcare staff and visitors were unacceptably low. Similar findings are presented in the UK (AL-Damouk 2004).

HCAs in paediatric patients have become an increasing concern worldwide because of their potential to cause long term, serious harm to children, in both well and very sick patients. The degree of severity is based upon vulnerability of the patient. The highest incidences of HCAs occur in intensive care units, both neonatal and paediatric, because these patients have a higher risk. Patients in intensive care, particularly neonatal and paediatric, are five times more likely to develop HCAI than those patients on general wards (Fleming 2006).

In my experience, HCAI risk factors for paediatric patients are both similar and different to adult risk factors. This is because the nature of children differs from adults. For example, children have a lack of perception and understanding of what they are facing. When patients are admitted to hospital, they may want to play with other patients rather than lie on their bed. They are unable to decide

what is dangerous or safe for them. This leads to the child's health status being dependent on parenting from parents or guardian. In addition, different families have different parenting styles. Parenting and cultural circumstances may affect the incidence of HCAs in children.

Minimizing the risk of infections in paediatric patients poses different challenges for paediatric infection control teams worldwide. The management of infectious diseases requires flexibility to accommodate paediatric patients. Nursing staff need to ensure that parents or guardians who participate in the child's care clearly understand the importance of infection control practice, particularly hand hygiene. Not all infection control measures recommended in adult populations apply to paediatric patients because of differences in host characteristics. Because of dependency and immune status, children are more prone to contracting infectious diseases and exhibit prolonged transmission (Wongsawat 2008). Paediatric units should establish appropriate policies and should ensure adherence to such policies, and also to regularly update these policies based on ongoing research (Wongsawat 2008).

1.4 Researcher's interests in exploring HCAI practices in England and Thailand

According to the background of HCAI as described previously, different problems between adults and paediatrics have inspired and challenged me to explore factors which influence infection control practices in paediatric wards. Moreover, HCAI rates vary between countries, but there are not many differences between Thailand and England. This has also inspired me to explore infection control practices between England and Thailand within the following research question: what are different factors influencing infection control practice in paediatric wards between Thailand and England?

There are several differences between England and Thailand. First, England is a developed country while Thailand is a developing country, so there are a

number of differences regarding medical technology, healthcare systems, ecology, economy and the education system which influence healthcare in both countries. Second, England and Thailand have different cultures. Some cultural aspects may impact on practices relating to HCAs. For example, the structure of the family unit, and values and attitudes towards caring for children may affect the transfer of infections between healthcare staff and patients or between visitors and patients. Even the nature of the media in each country, newspapers and television, may have an impact on politics and infection prevention practices. Therefore, comparing the two countries may provide some interesting data including life styles, culture, beliefs, attitudes, and infrastructure as a result.

In addition, the outcomes of this study might help to integrate best practice between the two countries and it will then be possible to set up a useful infection control protocol for paediatric patients in the future. These are the reasons why the researcher would like to compare the two countries.

1.5 Structure and content of thesis

There are several ways in which this thesis can be structured. For example, certain layouts are more appropriate for quantitative than qualitative work. This is because the main distinction of the qualitative approach is flexibility. However, Lincoln and Guba (1985) suggest that the researcher should provide an audit trail. The methods and logic of the study will be obvious and open to public scrutiny. In relation to Lincoln and Guba, in this study I will present the layout of this thesis as follows:

Title and abstract

Contents

Acknowledgement

- 1) Introduction to the study including background and study justification, the aims of this study and the structure of the study

- 2) Literature review
 - 3) The methodology and research design including description and justification of methods, the sample and setting, techniques and procedures
 - 4) Results
 - 5) Discussion
 - 6) Conclusion and Recommendation
 - 7) Reflection
- References
- Appendices

1.6 Chapter summary

Healthcare associated infections (HCAIs) remain an important public health problem associated with substantial morbidity and mortality in high-risk units, prolonged hospital stays, and increased healthcare costs. HCAIs are not only threatening to hospitalized patients and their families but they also result in a financial burden and have a negative impact on the healthcare image. Rates of HCAIs vary between countries; this includes infections in vulnerable patients, particularly neonates and children in intensive care units. This challenged me to explore different factors influencing infection control practices in children, and differences between developed and developing countries.

CHAPTER 2: LITERATURE REVIEW

2.1 Introduction

This chapter describes the context surrounding factors that influence infection control (IC) practices in paediatric children in Thailand and England, with regard to healthcare associated infections (HCAIs) previously known as nosocomial Infections (NIs). To discuss the research question, this chapter explores HCAIs, HCAIs in children, HCAIs in different countries, particularly Thailand and England, and IC practices in both countries.

This chapter begins by looking at the different terminology for HCAIs used in different countries, particularly in England and Thailand, and clarifies the terminology used in this study. HCAI incidence rates, causes and factors, variety of infections and characteristics of infection will then be reviewed. The chapter will progress to an explanation of the impact of infection on patients in hospitals in England and Thailand. The final section will look at interventions and difficulties in implementing IC practices. Additionally, this chapter will briefly discuss differences between England and Thailand looking at culture and healthcare.

A systematic approach was used to review the literature. Initial searches were conducted using combinations of keywords which are relevant to the research question. For example, the keywords “HCAI/HAI and NI” were used in the beginning, and then they were combined with “children” or “infection control practices”. Literature was selected from databases including Google, British Nursing Index (BNI), Medline, PubMed, Nursing and Allied Health Literature (CINAHL), ScienceDirect, the Centers for Disease Control and Prevention (CDC), Health Protection agency (HPA), Department of Health (DH), and Infectious Disease Association of Thailand from 2005-present. The search strategy is included as an appendix 1. Certain studies are older than 2005

because there is limited publication in Thailand. In addition, there is no recent study in some topics, such as the cost of HCAI in Thailand and so on.

2.2 Healthcare Associated Infections

The term “healthcare associated infection” has been defined by many organisations in different ways. Within this section, I will first explore the various definitions of healthcare associated infection as specified by different organisations, and then justify why this term was selected, based upon where the study was conducted.

2.2.1 What is “healthcare associated infection”, and the terminology

The Centers for Disease Control and Prevention (CDC 2010), the organisation for infectious diseases located in the United States of America (USA), defined healthcare associated infections or healthcare acquired infections (HAIs) as “infections acquired during the course of receiving treatment for other conditions within a healthcare setting”. In addition, the CDC have used the generic term “healthcare-associated infection” or “HAI” instead of “nosocomial” since 1988 (Horan and Gaynes 2004; Horan et al 2008). NIs are known as infections developed in hospital, or a systemic condition resulting from an adverse reaction to an infectious agent(s) or its toxin(s) after 48 hours of hospitalization (Siegal and Grossman 2008).

In the UK, the Department of Health (DH 2006), the Health Protection Agency (HPA) and the World Health Organisation (WHO 2009) defined healthcare-associated infections as “infections acquired in hospital” or “as a result of healthcare interventions”, and preferred to use HCAs in an abbreviation instead of HAIs. However, in the UK, HCAI is well known as an infection acquired both in the community and in hospital (Weston 2008; Filetoth 2003), but the term HAIs is specifically used for hospital acquired infections, and CAIs for community acquired infections.

However, the majority of HCAI studies published in the UK were focused on infection in the hospital rather than in the community (Raka 2009; Pittet 2010; Humphreys et al 2008). This includes the third national prevalence survey of HCAI in England conducted by the Hospital Infection Society (HIS) and the Infection Control Nurse Association (ICNA). There are many difficulties in classifying infections from hospitals and the community. For example, some patients were not investigated for MRSA within 48 hours after admission to the hospital. Thus the term HCAs is acceptable rather than HAIs, including in the study of infections acquired in the hospital.

As described previously, the term of healthcare associated infection (HCAI) was developed from NI, and then it was changed into healthcare associated infection (HAI) in the USA, and hospital acquired infection (HAI) in the UK. The term “nosocomial infection” has been widely used in the past and is still used in Thailand today, and is usually restricted to infections acquired in hospital rather than the community, even though the generic term of “healthcare associated infection” or “HAI” has been used instead of “nosocomial” by the CDC as mentioned previously. Thus, the term NI has been used in various publications in Thailand, as opposed to HAI or HCAI.

In this study, I focused on factors influencing infections acquired in hospitals in both England and Thailand. Therefore the specific term healthcare associated infections (HCAs) in relation to the UK are considered acceptable in this study.

2.2.2 Pathogens causing HCAs

HCAs are caused by several factors. Micro-organisms are the primary cause of infectious disease. Micro-organisms are all living things, which are invisible to the naked eye (Gross et al 1995). Micro-organisms have a direct impact on human life. Some are helpful as they are involved in the breakdown of complex foods, but some are harmful and cause disease. Different species of bacteria,

types of virus and other micro-organisms can result in HCAs, including fungi, protozoa, and prions (Filetoth 2003 ; Wilson 2006).

Harmful micro-organisms such as *Clostridium difficile* (*C. difficile*) have been a greater cause for concern than other pathogens recently. *C. difficile* is notorious for being a serious cause of hospital acquired diarrhoea. This has been a significant cause of patient morbidity and mortality recently. The 2008 outbreak of *C. difficile* at Stoke Mandeville hospital, and within the Maidstone and Tunbridge Wells NHS Trust, heightened media and public awareness of the dangers of this pathogen (Weston 2008).

C. difficile generally colonizes the gut and can be found in 2% of healthy adults whilst it is rarely reported in younger children (Perry 2007). The rate of colonization increases to 10-20% in elderly people who have ever been in contact with a healthcare facility (Perry 2007). Environmental contamination is a common problem with *C. difficile* because its spores are able to survive in the environment for many months. *C. difficile* can be found everywhere, including soil, swimming pools, and tap water, on nurses' uniforms, blood pressure monitoring cuffs, thermometers and on commodes (Barnett 2005; Perry 2007).

A wide range of harmful pathogens can be transmitted to patients in healthcare settings at any time during a hospital stay. Furthermore, healthcare interventions can facilitate the transfer of harmful micro-organisms to patients. Micro-organisms can initiate infection in different ways, depending on the patient's phenotype characteristics. Infections may vary in severity, ranging from minor discomfort and pain to serious illness, chronic illness, permanent disability and even fatality. HCAs can also increase the risk of acquiring other infections and, consequently, can increase the time spent in hospital (Dulworth and Pyenson, 2004).

Moreover, antimicrobial resistance is one of the major problems leading to HCAs such as Methicillin-resistant *Staphylococcus Aureus* (MRSA). More than 50% of HCAs are caused by bacteria that have become resistant to previously

effective antibiotics. Antimicrobial resistance is the resistance between a strain of bacteria in the patient and the antibiotic which was used previously to treat the same bacterial infection.

There are many factors contributing to the development of antibiotic resistance, including the patient's condition, exposure to antimicrobial treatment, transmission by contact with a carrier, contaminated equipment, and bugs (Weston 2008). The major risk factors for HCAs caused by antimicrobial-resistant pathogens are both the transmission of pathogens from person to person or the emergence of resistant strains after exposure to antimicrobial drugs. Thus, it is acknowledged that resistance is a complex phenomenon encompassing the organism, the antimicrobial drug, the environment and the patient's condition (Cohen and Tartasky 1997).

Moreover, Weston (2008) identified additional factors resulting in antimicrobial resistance. These include immunosuppression, alteration in the patient's unique flora during antibiotic therapy, unnecessary treatment with antibiotics, prophylactic administration, length of hospital stay, invasive indwelling devices, intensity and duration of exposure to broad-spectrum antibiotics, inadequate dose/duration (Weston 2008). Contaminated equipment and airborne spread from skin scales and dust also result in the transmission of infections in hospital (Perry 2007).

MRSA is well known as a serious problem both in the UK and worldwide (DH 2003, HPA 2007; Leifer 2005). *Staphylococcus aureus* (*S. aureus*) is found in up to 33% of healthy humans and generally colonizes the nose, perineum and non-intact skin of carriers (Perry 2007). MRSA is a strain of *S. aureus* that is resistant to antibiotics previously used to treat infection from the same bacteria (Perry 2007). Epidemic strains of MRSA began to emerge in the 1960s. An outbreak at Kettering Hospital in Northamptonshire during 1991-1992 affected 400 patients and cost more than £400,000 across the UK (DH 2003). However, different types of antimicrobial resistance have been reported in developing countries, including Thailand. According to limited available data, MRSA is

rarely reported in Thailand. For example, there are only 3-5 cases per month in the main hospitals and the university hospitals in Thailand.

2.2.3 Factors influencing healthcare associated infections

There are various factors contributing to HCAs. However these factors differ between different regions around the world and many of these factors have only been considered in adult populations. Thus, general risk factors for both paediatric and adult patients are described in this section. In addition, general risk factors may vary from one country to another. Thus, this thesis also focuses on variations in risk factors, with emphasis on variations between England and Thailand.

Factors leading to HCAs can be grouped into two major categories; endogenous and exogenous, or intrinsic and extrinsic factors (Weston 2008). Endogenous or intrinsic factors are those originating from inside the patient in whom a disease develops. Exogenous or extrinsic factors are those caused by the environment. Major extrinsic factors are the presence of invasive devices and procedures. These two major categories can also be subdivided into four distinguishable groups depending on the origin of their factors and possibility of infection (Filetoth 2003). These four groups are:

- 1) Endogenous objective risk factors, such as those that underlie diseases in the patient, and contribute to an increased susceptibility to infections.
- 2) Endogenous subjective risk factors such as behaviour or cooperation of a patient.
- 3) Exogenous objective risk factors, such as the structure and technical capability of the healthcare system and development of medicine in general, to prevent and influence the occurrence of diseases.
- 4) Exogenous subjective risk factors, such as the behaviour, attitudes and knowledge of those who influence the development of health-related events in other persons. (Filetoth 2003)

According to The Health Protection Agency (HPA 2007) and literature in the United Kingdom, factors contributing to HCAs are as follows:

- 1) Low resistance among patients or vulnerable groups such as neonates and children, patients who are receiving treatment, e.g. for cancer, diabetes or heart disease, because it can increase their vulnerability to infection and impair the ability of their immune system to deal with pathogens.
- 2) Treatments, especially invasive treatments such as catheters, surgery.
- 3) The widespread use of antibiotics to treat infection encourages antibiotic-resistant micro-organisms to emerge. This creates infections which are more difficult to overcome as a result.
- 4) Caring for many patients together in hospital provides opportunities for cross-transmission between patients, patients healthcare staff and from staff to patients. Respiratory tract infections such as influenza and tuberculosis (TB) are the most common HCAs as a result of close contact (Vaxholm 2006).
- 5) Infection from blood-borne viruses such as hepatitis may result from contaminated sharps or needlestick injury.

The worldwide literature suggests that there are a number of factors related to those above which contribute to HCAI problems, including:

- 1) Beliefs, attitudes and behaviour of healthcare professionals. Lack of concern about standards of hygiene and inadequate decontamination of the hands by healthcare professionals can promote cross-infection from one patient to another. Watkins et al (2006) and Borg et al (2009) found that perceptions of IC practices among health professionals affected staff compliance with recommended protocols. Aadditional studies advocate that attitudes of nurses and healthcare staff are associated with compliance and non-compliance of the guidelines (Askarian 2006; Larson 2006; Cl et al 2009; Guerra 2010). Good attitudes promote good practice as a result. As Yuan

(2009) argued, positive attitudes and sufficient knowledge can increase rates of proper hand hygiene practices.

- 2) Experience and knowledge of IC practices can affect IC practice (Ward 2010).
- 3) The nursing model or mentors can inspire IC practices (Snow, White et al 2006).
- 4) Healthcare policy and infrastructure of infection control teams (ICTs) (Griffiths, Renz et al 2009; Sekimoto, Imanaka et al 2009).
- 5) Environmental factors. Low levels of cleanliness of instruments, floors, walls, office facilities, i.e. telephone, computer, keyboard, mobile phone (Brady, Wasson et al 2006; Srikanth, Ezhil et al 2008; Velusamy, Arshak et al 2010).
- 6) Food hygiene in clinical settings may contribute to the spread of HCAs (Lund and O'Brien 2009; Velusamy, Arshak et al 2010).
- 7) Organisation factors. For example, high bed occupancy (Hamel, Zoutman et al 2009), low healthcare staff-to-patient ratios (Brown, Crawford et al 2008) and a mix of patients with a wide range of serious illnesses from a large geographic area.
- 8) Estates and facilities. Adequate facilities such as bed capacity, equipment, i.e. gloves, masks, aprons, disinfection agents etc. (Rechel, Buchan et al 2009), sheets and room services, uniforms and laundry (Hall, Wren et al 2009)
- 9) Patients' knowledge, attitudes, behaviour (Abbate, Di Giuseppe et al 2008) and public awareness (Gould, Drey et al 2009). As Michie and colleagues (2005) described, social behaviours and social influences can contribute to personal behaviour. Thus, public concern is one of the key factors influencing IC practice.
- 10) Low income (Zimmerman 2007) can promote difficulties in IC in developing countries.
- 11) Antimicrobial resistance makes HCAs more difficult to treat (Falcone, Serra et al 2009; Huang, Weintraub et al 2009).

In addition, there are certain factors which contribute to HCAs in paediatric

patients, such as religion (Allegranzi, Memish et al 2009) and cultural issues (Grant, Charns et al 2008; Rytterström, Cedersund et al 2009). Different religions are associated with different life styles (Berry et al 2004). For example, in Christian societies, married people usually wear a wedding ring while Buddhists are not concerned with wearing a wedding ring. In addition, people in western cultures often greet each other by kissing or shaking hands, while in Thai cultures people greet each other by doing “Wai”. “Wai” or “Sawasdee” is “verb” to show the common greeting that Thai people respect each other by raising both hands, and then palms joined with the fingers pointing upwards and bow slightly.

The model of nursing practice could also impact on cross infection between people. In terms of the model of nursing practice (Murphy, Jones et al 2009), certain paediatric departments typically use family-centered care models to develop psychological issues such as attachment and bonding between parents and children. Thus, certain units allow parents to stay with their children. If parents or visitors are not concerned about contamination and cleanliness and therefore do not practice hand hygiene, they may allow infections to be transferred from them to their child or from their child to other children (O'Connell and Landers 2008; Andrews 2010).

According to Chan et al (2006), the balance of IC practices and family-centered care is a serious concern regarding paediatric patients. For example, nurses working with paediatric patients should balance physical and emotional needs and adherence to IC procedures, while at the same time offering psychological support to family members (Gay, Pronovost et al 2009). Moreover, meeting psychological needs in children, such as having toys from home or in the paediatric ward, could unintentionally introduce micro-organisms (Fleming and Randle 2006; Naesens et al 2009). This issue is difficult to control in children, who like to play with toys and do not understand how toys could potentially affect their health status.

In summary, there are various factors influencing HCAs, and seemingly they vary depending on the patient's age, underlying disease, treatments and interventions, the environment, culture, beliefs, attitudes and life style.

2.2.4 Types of healthcare associated infections

HCAIs are classified differently by different organisations which can make it difficult to make comparisons between countries. For example, the National Healthcare Safety Network (NHSN) guideline has been chosen to classify HCAs in Thailand. According to the literature, most HCAs are related to device associated infections (DAIs), resulting from advances in medical technology and treatment (BMA 2006; Doshi et al 2009). Thus, HCAI rates are high in intensive care units (ICUs), where medical devices are commonly used (Rosenthal et al 2008; WHO 2009). For example, the International Nosocomial Infection Control Consortium's (INICC) surveillance, which studied 78 ICUs in 37 cities in 13 countries, found that the ventilator associated pneumonia (VAP) rate was 18.6 per 1000 device days, central line associated bloodstream (CLABSI) infection rate was 10.1 per 1000 CL days, and catheter associated urinary tract infection (CAUTI) rate was 6.9 per 1000 device days (Rosenthal 2008). Meanwhile, a report from four Mexican public hospitals showed a slightly different order of results. It stated that the overall rate of catheter-associated bloodstream infections was 23.1 per 1000 device-days; VAP rate was 21.8 per 1000 device-days, and CAUTI rate was 13.4 per 1000 device-days (Barba et al 2006).

However, HCAs can be roughly grouped into six main criteria, including urinary tract infection, respiratory tract infection, surgical site infection, gastrointestinal infection, bloodstream infection, and others such as infections occurring in infants that result from passage through the birth canal. This will be described in greater detail in section 2.2.5.1.

2.2.5 The incidence of HCAs

This section will look at the worldwide incidence of HCAs before narrowing the focus to the incidence in developing and developed countries, and then the incidence in England and Thailand will be discussed.

According to WHO (2009), the worldwide burden of HCAI is unknown because of difficulties in gathering reliable diagnostic information from all countries, particularly developing countries. However, overall estimates by WHO indicate that more than 1.4 million patients worldwide in developed and developing countries are affected at any time. Rates of infection vary between countries and within the same country depending on resources, involvement of healthcare staff and caregivers, and patients' socioeconomic situation (Hambraeus 2006). For example, the global point-prevalence studies reported by Chawla (2008) revealed that NI rates ranged from 6.1% to 15%, while a recent study from China found that the overall patient NI rate was 26.8% or 51.0 per 1000 patient days (Ji-Guang Ding et al 2009).

A current prevalence survey of all patients in Europe, Australia and North America also found that 5-10% of all patients will acquire HCAs during admission (Weston 2008; Breathnach 2009). It is clear that rates differ substantially between the developed countries and the study from China. Moreover, rates of infection are also different even within developed countries. According to a prevalence survey from four countries in the UK conducted by the Hospital Infection Society and the Infection Control Nurse Association in 2006, the overall rate of HCAI was 7.6%. The rate of HCAI was 8.2% in England (Humphreys et al 2008) while the overall rates in the Republic of Ireland, Wales and Northern Ireland were 4.9%, 6.3%, and 5.5% respectively.

HCAI rates also vary within developing countries. The incidence is reported to be 5-15% of hospitalized patients and can affect 9-37% of those admitted to intensive care units (WHO 2009; Pittet and Donaldson 2006). Several studies

conducted in developing countries have reported a wide range of infection rates which are higher than in developed countries while rates of infection in some developing countries, such as Thailand, are not significantly different from developed countries. For instance, a prevalence survey conducted in Thailand in 1988, 1992, 2001 and 2006, shows that HCAs rates were 11.7%, 7.4%, 6.4% and 6.5 %, respectively (Danchaivijitr et al 2007), while in some parts of Asia and South Africa rates were higher than 40% (WHO 2009; McFee 2009).

HCAIs caused by pathogens can affect every system in the body including the respiratory tract, urinary tract, gastrointestinal tract, skin or surgical wounds and the bloodstream. The site of infection also depends on the patient's phenotype characteristics and their illness. A study by the Department of Health in 2003 found that the most common infection area was the urinary tract (23%), followed by the respiratory tract (22%), surgical sites (9%), and the bloodstream (6%) (DH 2003). According to a recent prevalence survey across England in 2006, surgical site infections, urinary tract infections, pneumonia and gastrointestinal infections were the most predominant (HIS/ICNA 2006). Whilst a prevalence survey from 20 university hospitals in Thailand in 2006 found that the most common site of HCAI was the lower respiratory tract (36.1%), followed by the urinary tract (25.5%) (Danchaivijitr et al 2007).

According to data from both England and Thailand, overall HCAI rates are higher in England compared to Thailand. However, findings from data gathered from English and Thai hospitals depend on which guideline definition is used. For example, the National Nosocomial Infection Surveillance (NNIS) often employs different diagnostic criteria and methods for coding data. This procedure is rather complicated because HCAs/NIs have been grouped into 13 main categories in this guideline. Additionally, diagnosis of HCAI needs to be undertaken by a physician. If the patient meets the criterion of HCAs but the physician fails to make a positive diagnosis, this can lead to unreported HCAI cases. However, this guideline is widely accepted for diagnosing and monitoring HCAs worldwide (Stevenson et al 2008).

Furthermore, limited data regarding HCAs are available from developing countries. It is necessary to note that most of the cited studies involved individual hospitals; therefore, these figures may not be representative of the problem across a whole country such as Thailand. Lack of equipment, unreliable laboratory data and lack of standardized medical records contribute to a lack of published data from developing countries.

2.2.5.1 The incidences and factors of each type of HCAI

1) Healthcare-acquired urinary tract infection (HA-UTI)

Healthcare-acquired urinary tract infection is the most common infection occurring in adult patients worldwide (CDC 2007). It can be defined as catheter-associated urinary tract infection (CA-UTI) because the majority of cases are in patients with inserted urine catheters. According to prevalence surveys, HA-UTIs account for 19.7% of HCAs in the UK (HIS/ICNA 2006), whilst 25.5% occurred in Thailand (Danchaivijitr et al 2007).

There are various factors influencing UTIs in both upper and lower urinary tracts, and urinary catheter insertion is one of the most common causes. Moreover, the increasing occurrence of CA-UTIs may result from prolonged use, unjustifiable indications of urinary categorization, immunosuppression and unfavorable host factors, including underlying disease (Weston 2008; Saint, Kaufman et al 2006). Similarly, Graves et al (2007) studied factors associated with UTIs, and reported a similar finding regarding prolonged length of stay in hospital. Additional findings in his study are frequency of insertion of urinary catheter, retained urinary catheter, open spinal injury, and transferring patients between hospitals (Graves et al 2007).

2) Hospital acquired pneumonia (HAP) or healthcare associated pneumonia (HCAP)

HAP is the most severe and life threatening of all respiratory tract infections. HAP/HCAP is defined as pneumonia occurring more than 48 hours after hospitalization, including both with and without intubation. Worldwide, point-prevalence studies have reported ventilator-associated pneumonia (VAP) infection rates ranging from 6.1% to 15%. Apparently, rates are extremely high in Asia (Chawla 2008). According to a prevalence survey in Thailand, HAP was 36.1% (Danchaivijitr 2007). The primary source of HAP is mechanical ventilation, so VAP is used in terms of infection occurring after intubation, and it is one of the most common ones in the HAP group.

According to the studies reviewed, there are many factors contributing to HAP and VAP, including age, sex, malnutrition, immunosuppression, aspiration, underlying illness, the presence of intubation or enteral feeding, multiple organ system failure, preexisting pulmonary disease, prolonged hospital stay, prolonged mechanical ventilation, and supine position. Moreover, previous use of antibiotics for more than two weeks, diabetes, dialysis, re-intubation due to failed weaning, use of immobilized sedative, exposure to contaminated respiratory devices, transmission of pathogens by healthcare staff ' hands from contaminated equipment, endotracheal suctioning, and nursing care are also contributory factors (Weston 2008). These factors were similar to the panel review by Chawla (2008), whereby some factors probably increase the amount of infection with multidrug-resistant pathogens, including regular dialysis, immunosuppression, heart disease, renal failure, hepatic failure, a high incidence of antibiotic resistance in the community, and/or the presence of a family member colonized with a multidrug-resistant pathogen.

3) Surgical-site infections (SSIs)

SSIs are operative complications that arise in approximately 2% of surgical procedures and account for some 20% of healthcare-associated infections

(Lissovoy et al 2009; Sarvikivi et al 2008). SSIs have been a serious problem throughout the entire history of surgery. There is considerable variation in rates of SSIs acquired in hospital. This is due to different types of operation. Recently, this problem seems to be recognised as a measure of quality of patient care by the surgeon and ICTs (Weston 2008). Patient susceptibility, wound classification, duration of surgery, surgical technique, presence of foreign material, length of hospital stay, preoperative hair removal, urinary catheter and antibiotic prophylaxis are risk factors for the development of surgical wound infection (Weston 2008; Pessaux et al 2005).

4) Bloodstream infection (BSI)

BSI is the most dangerous of the HCAs. The CDC definition of catheter associated infection is a positive blood culture in a patient in whom a central line has been in use < 48 hours previously (Grady et al 2007). Apparently, catheterization is also a major contributory factor resulting in this problem. It is estimated that about 250,000 central venous catheters (CVCs) are used in the UK and approximately 6,000 patients per year develop a catheter-related bloodstream infection in the UK (CR-BSI) (National Audit Office 2004). Catheter associated infection can be defined as catheter-related bloodstream infections (CRBSIs) or central line-associated bloodstream infections (CLABSIs).

CLABSIs also result in many complications, including hospital mortality (12% to 35%) and prolonged hospitalizations (Doshi et al 2009). Moreover, CLABSIs also cause financial problems because each case of bacteremia costs approximately £6,000 to treat (National Audit Office 2004). The risk of BSI depends on many factors. According to epidemiological studies on vascular catheters, the use of central venous catheters (CVCs) is mostly applied with peripheral insertion, and it has extensively occurred in intensive care units (ICUs) (Raad et al 2007). Additional factors relate to patient problems, including underlying health condition and immunosuppression, insertion technique, poor

maintenance and prolonged catheter use with discretionary decisions made by healthcare professionals (Ramritu et al 2007).

5) Gastro-intestinal tract infection

Gastro-intestinal infection is apparently not a significant problem in adults. One of the diseases that has been making the headlines in the mass media is popularly known as “gastric flu”, caused by noroviruses (Koopmans 2009). However, it is a serious cause of morbidity and mortality in patients with compromised immune function. These patients include neonates and low birth weight patients. According to the literature, most cases of infection are acquired at home, but infection can break out in the hospital if healthcare staff do not practice good hand hygiene.

This problem is associated with several factors, including harmful micro-organisms, age, poverty, malnutrition, compromised immune function, food hygiene training, which relates to water-borne NI or food-borne NI (Weston 2008). Rotavirus (RV) is the main causative agent of gastroenteritis in young children worldwide and also in Thailand. It could be one of the most prominent nosocomial pathogens in patients admitted with vomiting and fever, especially during RV season (Waisbourd-Zinman et al 2009; Wongsawat et al 2008). Moreover, there are other organisms such as *C. difficile*, which has greater pathogenic potential and is notoriously the most significant cause of hospital acquired diarrhoea. This also relates to antimicrobial resistance described in the previous section.

6) Other healthcare associated infections

Occasionally, HCAs affect the cardiovascular system, central venous system, bones and joints, eyes, ears, nose, throat or mouth (EENT), skin and soft-tissue (SST).

In conclusion, HCAs can be grouped into six major types according to the affected organ. Factors influencing HCAs vary in each group. The most common problem appears to be device associated infections. However, in order to conduct surveillance and compile data for public reports, the specific type of infection should be determined based on the Centers of Disease Control and Prevention and National Healthcare Safety Network (CDC/NHSN) definition because the diagnosis is defined based on detailed criteria. These six groups have been further grouped into 13 major categories. For example, urinary tract infections can be separated into 3 minor groups, symptomatic, asymptomatic and others.

2.2.6 The characteristics of transmission

There are many different routes of transmission of pathogens to patients resulting in HCAs. HCAs can be transferred between people such as from one patient to another or between patients and healthcare staff, particularly in vulnerable patients. Moreover, pathogens can also be transferred by direct and indirect contact, droplet transmission, airborne transmission, food and drink transmission and vector-borne transmission. These routes are referred to as cross transmission between hosts.

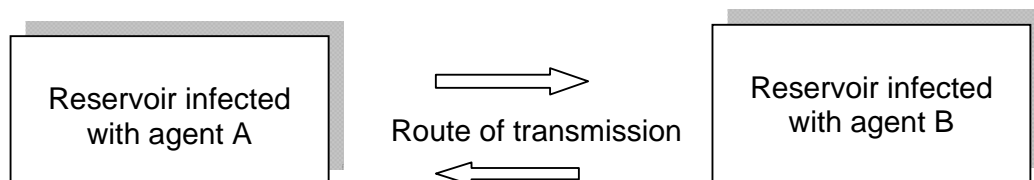


Figure 1 Cross-transmission of infectious agents between hosts.

However, transmission of infectious agents in healthcare settings is more complicated because there are many factors involved (Filetoth 2003) (see figure 2).

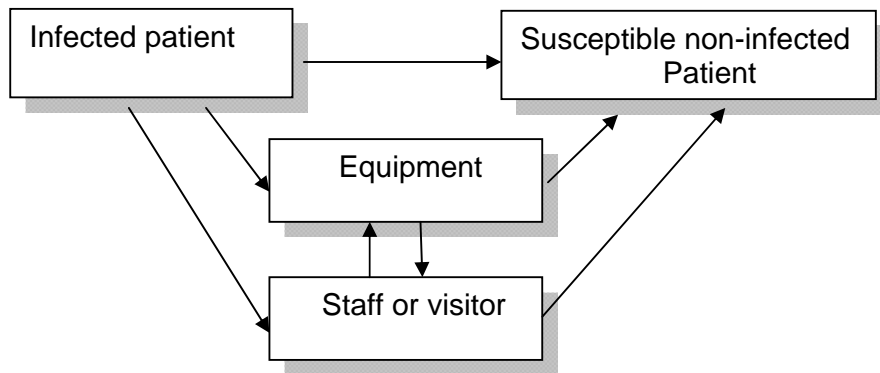


Figure 2 Relationship between patients, staff and visitors in the chain of infection in hospital.

2.2.7 The impact of healthcare associated infections

The impact of HCAs is significant and can be broadly divided into 3 groups comprising: the impact of HCAs on patients and families, on hospitals and healthcare staff, and on the general public. Each was briefly described in chapter one. However, the following section will explore, in more depth, the extent of the impact of HCAs on each of these 3 groups.

1) The impact of HCAs on patient and family

HCAs result in increased patient morbidity and mortality (Sheng, Wang et al 2007). Patients with an HCAI spend, on average, an additional 11 days in hospital in developed countries (Plowman et al 2001; Weston 2008), while a recent study by Sheng et al (2005) found that the average hospital stay in China is an additional 19-20 days. However, this seems to vary depending on many factors, including endogenous and exogenous factors as described in section 2.2.3. For example, patients who have been admitted with cancer and receiving chemotherapy are more vulnerable than general patients. They are at high risk of contracting infections (Sheridan-Leos 2008).

2) The impact of HCAs on healthcare systems and healthcare staff

The prolonged hospital stay is a key indicator of the impact of HCAs. Delayed discharge results in lost income, along with money spent on antibiotic therapy, further treatment and extra treatment. For example, a patient who contracted a SSI after an operation for appendicitis may need to stay longer for further treatment than another post-operation patient.

A study by the Centers for Disease Control and Prevention (CDC 2007) and similar studies (Klebens 2007) estimated that 1.7-2 million HCAs occur annually in American hospitals, leading to 90,000 deaths and \$4.5 billion in extra costs. In addition, a recent study by Stone et al (2008) reported that the hospital-related financial burden of HCAs in the United States was approximately \$233 to \$275 million in 2006. Similarly, the cost of HCAs in England is high – the National Audit Office (DH 2005) estimated it at £930 million annually, and between £4,000 and £10,000 per infection (DH 2006).

However, the statistics in developing countries are varied. There are not many published articles from developing nations because of a lack of resources, including budget, laboratory systems, microbiologists and researchers. For example, there has only been one article published in Thailand since 1989. That paper reported that patients with NIs remained in the hospital on average 21.5 days longer, incurred hospital charge of average 8,537 bahts (£177), and also had higher mortality rates than the control at 24.3% (Jamulitrat et al 1989). This relates to the study by Stone, who found that the cost burden varies greatly between healthcare settings owing to the different methods used to estimate costs (Stone et al 2009). Different types of adverse outcomes, including differences in body organs affected after admission can also result in different costs of treatment. For instance, nosocomial bloodstream infections (BSIs), which are the most serious health care-associated adverse problem, seem to be the most prevalent HCAI compared to other hospital acquired infections

(Stone et al 2009). True costs of BSIs are likely to be between \$10,000 and \$20,000 (Kilgore and Brossette 2008).

3) The impact of HCAs on the general public

In this section the researcher will discuss the impact of HCAs in relation to the general public, including patient perceptions and public awareness of the healthcare system. This also highlights a need for the healthcare service to place greater importance on IC practice.

HCAs can impact on the public in both positive and negative ways. For instance, the recent outbreak of *C. difficile* in the UK raised public concern about the risk of becoming infected. In contrast, the NHS was forced to address cleanliness in hospital (Arias 2008).

In terms of the public's right to know, information regarding diseases and incidence is available through mass media and Internet in many countries, particularly developed countries. These data are easy to access, such as the annual report from the Department of Health and Health Protection Agency via the Internet, or public reports such as journals in the UK. Washer and Joffe (2006) suggested that the mass media presentation of Methicillin-resistant Staphylococcus Aureus (MRSA) acts as a link between medical and public understandings of the phenomenon. Moreover, discussions in certain media such as radio or television news provide the bridge between events and lay people. This issue drives ICTs to develop laws to collect accurate data in order to report matters of public health importance (Meier, Stone et al 2008).

Health information is also available on National Health Service (NHS) trust websites worldwide, especially in developed countries. Thus, people can search and access information whenever they require. Gill (2006) found that mass media was the easiest route for patients/visitors to obtain health information (68%). His research showed a high level of awareness among the general

public and healthcare staff alike. However, resources are limited in developing countries (Fletcher 2009), and lay people rarely access healthcare information, or, if they access such information, they are often unable to understand it (Gould 2009), depending on their educational background.

All in all, the general public concern seems to influence healthcare practice because it is one of the factors which drives healthcare settings to establish ICTs. The infection and prevention and control (IC) issue will be described in more detail in the next section.

2.3 Healthcare associated infections in children

According to the literature reviewed, HCAs are a major cause of mortality and morbidity in neonates (Posfay-Barbe, Zerr and Pittet 2008). NI pathogens in children differ from adults owing to their immature immune system and vaccination status. Seemingly, IC protocols for adults have been used for paediatric patients because there are no standard IC protocols for paediatric patients. Section 2.3.1 describes the overview of HCAs in paediatric patients, and the incidence of HCAs in children in England and Thailand are presented.

2.3.1 The overview of HCAs in children

HCAs are one of the most serious causes of adverse events in pediatric patients, particularly neonates (Callaghan 2007; Chudleigh et al 2005; Orsi et al 2009). According to the National Center of Infection Diseases (Jarvis 2009), HCAs are the major cause of morbidity and mortality in paediatric patients in the USA and throughout the world. Neonates and infants are particularly at risk of developing HCAs because they have low resistance and lack of self-care ability, particularly premature infants who are relatively immunocompromised (Donowitz 1988; Wongsawat 2008).

Rates of infection also vary between countries and within the same country (Callaghan 2007). This is because rates of infection vary depending on patients' conditions, including vulnerability, compromised immunity, antimicrobial susceptibility pattern (Srivasta and Shetty 2007), and those undergoing surgical procedures or invasive interventions. Moreover, site and pathogen distribution also vary relating to age-group and setting (Posfay-Barbe et al 2008). Thus, neonates or children who have been admitted to intensive care are at higher risk of HCAs than those who have been admitted to the general wards.

According to the literature, paediatric and adult patients share common risk factors such as exposure to medical devices (Balkhy 2009) and healthcare staff (Bellini 2009; Cantrell 2009; Cook 2007; Chudleigh et al 2005), anti microbial treatment (Auriti 2005), and immune-compromising conditions (Kamboj 2009). However, there are additional factors inherent in children such as vaccination (Downs 2008), and child development in relation to behavioral and emotional needs and self care. These also affect the risk of infection in children.

Owing to the impact of evolving complex treatments nowadays, the advance in antimicrobial resistance and re-emergence of various infectious diseases in the paediatric setting has become an increasing concern, and paediatric units should establish their own policies suitable for children.

2.3.2 HCAs in paediatric patients in England

Several studies have been carried out in the UK focusing on HCAs in paediatric patients. Rayner (2003) and Rowley (2004) reported that MRSA remains a HCAI and the occurrence of invasive infection in vulnerable patients justifies increasing efforts to limit the spread of MRSA. Adedeji and Gray (2005) reported that the number of new cases of MRSA declined from 72 in 1998 to 52 in 2003 at an English children's hospital, whereas hospital IC action increased.

According to the risk factors described in sections 2.2.3 and 2.4.1, there are various factors leading to HCAs in children, which lead to high morbidity and

mortality, particularly in immature newborns. This is due to a long stay in hospital and treatment using various invasive procedures (Srivastava and Shetty 2007). According to the paucity of literature published in the UK, these factors can be separated into two major groups; intrinsic and extrinsic factors.

In relation to intrinsic factors, Gould (2004) found that the fall of cleanliness in British hospitals and the nursing contribution, especially hand hygiene, is associated with outbreaks of HCAs in children in the UK. Nurses play a major role in meeting the required standards and they must receive appropriate education and training.

In relation to extrinsic factors, decontamination of the healthcare environment, its fixtures, fittings and clinical equipment are also of pivotal importance in maintaining cleanliness, controlling infection and regaining consumer confidence in healthcare. Fleming and Randle (2006) found that 85% of the toys in a paediatric unit harbored viable bacteria, which could affect the child's health.

2.3.3 HCAs in paediatric patients in Thailand

In Thailand, despite an increasing number of ICTs in hospital, HCAs remain a significant cause of morbidity and mortality in paediatric wards. Most HCAs occur in neonatal intensive care units, and risk of HCAI depends on the degree of illness and the patient's own immunity. The major problems in children relating to HCAI are gastrointestinal tract infection and Streptococcus pneumonia (MOPH 2007). Viruses are the main pathogens occurring in general paediatric wards, and bacteria are the main causes of device-associated infections, including catheter-related bloodstream infections, and ventilator-associated pneumonia in neonatal and paediatric intensive care units (Wongsawat 2008). These occur through endogenous or intrinsic factors such as the patient's vulnerability, and extrinsic factors such as the environment and healthcare interventions.

There are a small number of reported incidents regarding MRSA in children because of the limited number of studies. There are several factors related to cross-infection in children such as immunosuppression, hospital capacity, professional workload, cultural issues, and education and economic problems. Hygiene behaviors such as insufficient frequency of hand washing are a common problem associated with increasing HCAs in children (Chompook 2006). In addition, there are additional factors regarding knowledge, skills, lack of personal responsibility, lack of equipment and time available in relation to HCAs (Danchaivijitr 2005).

In relation to the researcher's experiences in paediatric wards and in neonatal intensive care units in Thailand, maintaining good practice guidelines is extremely important for paediatric nurses. This is because cross-infection in neonates and young children results from a lack of personal responsibility regarding hand hygiene and compliance with standard precautions. Moreover, in terms of the extended family, life style and child rearing can develop different difficulties in IC practices. For example, it is difficult to control the hand-washing behaviours of parents and care givers before touching their child, particularly when there are a large number of visitors.

According to the literature reviewed, HCAs are a serious concern, especially in very young patients. According to the literature, it appears that there are two main groups of factors influencing IC; extrinsic factors and intrinsic factors. Factors contributing to HCAs in children are both similar and different to adult patients. Similar factors are mostly extrinsic factors, including healthcare behaviours, IC practices and supportive policies. Additional factors are due to patients' own immunity, patients' condition and the nature of paediatric patients.

In addition, the literature suggests that intrinsic factors are the major factors leading to compliance and non-compliance to IC guidelines in clinical settings, and major factors relate to the individual or personal responding to clinical practice. Thus, the next section will provide relevant factors which may

contribute to differences in individuals' infection practices, including culture, human behaviour, social influences and life styles between Thailand and England.

2.4 Infection Prevention and Control

This part of the literature review is an overview of infection prevention and control (IC). The content will begin with the history and development of IC from when records first began, focusing specifically on the UK and Thailand. Then the principle of HCAs is reviewed, including IC strategies and guidelines. The section will continue with the development of infection control nurses (ICN). The IC practices and the problems of implementing infection guidelines will then be discussed. The overview of IC described within this section is in relation to infection prevention and control only in adult patients because there are no published IC guidelines for children.

2.4.1 Development of infection control

The importance of infection prevention has been recognised as far back as biblical times, and it is still important in the early years of the twenty-first century (Perry 2007). Infection control began when leper colonies were separated from the rest of the population by using an 'unclean' bell. The bell was also used during the 1665 plague to warn people to stay away when the dead bodies of plague victims were collected at night, in order to avoid contact with healthy people (Perry 2007). In 1665, protective clothing, masks and gloves were used by doctors in order to prevent cross-contamination of plague. Later, in the early 1800s, records show that the mothers of babies delivered by doctors and medical students were dying from infections (Perry 2007). After that, hand washing with chloride of lime was implemented by Semelweiss, the Hungarian obstetrician, to prevent infection and death rates declined immediately. Florence Nightingale was the first nurse on record who attempted to prevent infection during her work in the Crimean War. She recognised that placing a large

number of patients in a limited space might contribute to the spread of infection. She also introduced many hygiene protocols, some of which remain relevant to this day. A new era in infection management began with the advent of penicillin in the 1940s, and infection prevention measures were established in the late 1950s due to a pandemic of infections from *Staphylococcus Aureus* (Perry 2007).

In 1959 IC was strengthened in the UK after a nurse at a Torquay hospital was appointed as the first ICN. This was because the microbiologist was based 30 miles from the hospital and could not visit the hospital every day. Thus, the ICN helped the microbiologist with infection prevention and control in the hospital (Perry 2007). Infection prevention and control gradually developed over the following decades. However, in the early 1980s, the appearance of acquired immune deficiency syndrome (AIDS) provoked the development of a renewed IC committee (Perry 2007). In the late 1980s, an outbreak of salmonella at Stanley Royd Hospital resulted in the deaths of several patients (Perry 2007). This encouraged the Department of Health to issue instructions to hospitals around the UK and appointed ICNs to manage outbreaks of infection. This led to further strengthening of infection prevention and control services in the UK (Perry 2007).

In Thailand, IC practice began many years ago since babies were delivered at home by people who were not nurses or doctors. They were called “Mor-Tum-Yae” in Thai, or “Nobilitas obstetricum” in English. They taught themselves to prevent death after birth by washing their hands and boiling all natural equipment such as part of a bamboo tree and scissors before using for deliveries. Medical schools and nursing schools were established later. Thus, Mor-Tum-Yae diminished because of the increasing numbers of midwives from nursing schools undertaking this role. However Mor-Tum-Yae still remained in some rural areas in Thailand, particularly areas located far from hospitals (MOPH 2007).

The surveillance system in Thailand was established in 1969 based upon the requirements of the World Health Organisation (WHO) in order to report cholera, plague or yellow fever to WHO (MOPH 2007). This department was called "International Health Regulations". However, the organisation did not receive adequate attention owing to the fact that if any country reported any of the diseases to the WHO there would be a negative impact on tourism and the image of country. This situation resulted in an ineffective surveillance system in Thailand. By 1971, the surveillance system had continuously developed since NI was introduced into Thailand (Danchaivijitr et al 2005).

The Department of Disease and Control in Thailand initially developed from the Epidemiology division in 1972 (MOPH 2007), and was responsible for collecting data around Thailand and reported to the Ministry of Public Health (MOPH). This division covered all provinces of Thailand. It was formerly known as the Unity of Disease Surveillance and Disease Control, but has been established as the Centre of Infection Control beyond the MOPH since 2003 (MOPH 2007). There were several difficulties regarding the surveillance system and IC in Thailand developed slowly, including the negligence of the original intent of surveillance, misconception and the uncertainty of the Unity of Disease Surveillance. The Ministry of Public Health initiated NI control as an indicator of medical service in 1982, and this led to an extremely developed IC service in hospitals around Thailand.

Thus, it is noteworthy that ICTs in Thailand are mostly handled individually or set up separately as regional networks. For example, there were several groups of IC, including the Northern region, the Southern region and the Eastern region and the Central network region. In addition, there is the university hospital network. The Infectious Disease Association of Thailand is the centre of publication on infectious disease and control, and most published articles come from the University Hospitals rather than the hospital under the MOPH. As mentioned above, data obtained from the Infectious Disease Association are different from the MOPH as a result.

2.4.2 Principles of preventing healthcare associated infections (HCAIs)

Reducing HCAIs is a major concern worldwide. Patient safety is a key component of healthcare (WHO 2009). Patients should be protected against infection during their hospital stay. It is difficult to eliminate the risk of HCAIs entirely, but proper IC practice can reduce the incidence of HCAIs. According to the literature reviewed, HCAIs can be prevented through good clinical practices and applying the basic principles of IC when undertaking patient care. Most outbreaks reported in clinical settings are associated with non-compliance with IC procedures (The Committee of Infectious Diseases and Committee on Practice and Ambulatory Medicine 2000; DH 2003). Good practices include ensuring healthcare professionals comply with hygiene guidelines such as hand-washing, sterilization of equipment, uncontaminated food and a clean environment. Moreover, to battle HCAIs, basic IC actions need to be implemented by all healthcare staff all of the time (Weston 2008).

2.4.3 Infection control strategies

Preventing HCAI should be integral to all hospital policies. It should be done not only during outbreaks but also in every-day healthcare settings. IC policies and strategies are important in driving IC practice. Raka (2009) argued that a lack in progress of IC supporting policies are absent in the hospital systems. When policies are set out, practitioners and relevant staff, including ICTs, will set goals and strategies related to those policies in the clinical setting. This can lead to effective infection prevention and control as a result.

In December 2003, the Department of Health (DH 2003) distributed an infection prevention and control strategy, entitled *Winning Ways*, to be used as a standard guideline for IC in the UK. Consequently, NHS trusts are compelled to develop and implement plans for reducing HCAIs, particularly MRSA. The Chief Executive (CE) has overall responsibility on behalf of the Trust Board for the prevention and control of infection. Likewise, an ICT was appointed in Thailand

in 1982 (Danchaivijitr 2005), but records were lacking as discussed in section 2.3.1. However, a Thai Infection Control Strategy has been developed for the period 2006- 2009 to effectively minimize the risk of spreading infections (MOPH 2007).

Both strategies, in Thailand and England, are related to national policies and procedural guidelines in each country. Thus, effective IC is based upon national policies and also the difficulties of IC practices within countries. According to Gould (2005), policy makers in the UK are emphasising initiatives to increase compliance with hand hygiene protocols because most cross-infections occur via the hands. Therefore, compliance to hand washing guidelines should be set into IC strategies to promote extensive hand hygiene in healthcare staff.

2.4.4 Infection control guidelines

IC guidelines are the protocol for practitioners to conform to standardized procedures. These guidelines were generated from the expertise of ICTs based upon each hospital's policy, and have already been tried out to develop best practice for implementation. However, the accomplishment of IC depends on the cooperation of all staff. Failing to conform to the guidelines can lead to IC difficulties. Thus, every healthcare member of staff plays a vital part in following the guidelines. Standard precautions underpin routine safe practice, protecting both staff and patients from infection.

There are many guidelines for infection prevention and control. These guidelines are generated from different organisations around the world. However, the currently accepted guidelines were produced by well known IC organisations, including the Centers for Disease Prevention and Control and the National Healthcare Safety Network (CDC/NHSN), the Evidence Based Practice in Infection Control (EPIC), and the World Health Organisation (WHO). These guidelines were collected and adopted in different countries depending on the

ICT. The following are sample guidelines selected to illustrate that guidelines vary depending on the hospital and organisation that devised them.

According to the Royal College of Nursing handbook (RCN 2005), best practice guidelines to prevent HCAs include:

- Hand hygiene
- Using personal protective equipment
- Safe handling and disposal of sharps
- Managing blood and bodily fluids
- Achieving and maintaining a clean clinical environment
- Appropriate use of indwelling devices
- Managing accidents
- Good communication – with other healthcare staff, patients and visitors
- Training and education

Additional issues are listed by the Guide for Health Professionals (British Medical Association, BMA 2007), these include:

- Dress code in the clinical setting
- Optimal use of antimicrobials
- Active surveillance and investigation
- Reducing reservoirs of infection
- Managing of organisations
- Screening and isolation
- Information for patients and visitors
- Research and development

The national IC guidelines were selected based on several conditions, including national policies, problems, budget, facilities, and circumstances. For example, the IC and standard precaution guidelines utilised in the NHS trust are based on the EPIC guidelines and CDC (DH 2006). (EPIC = evidence based practice

in infection control). In Thailand, IC guidelines were set out by the consensus of ICTs and nurse practitioners based on the CDC/EPIC guidelines, WHO guidelines and the National Healthcare Safety Network guidelines (NHSN guidelines). The drafted guidelines were modified four times, firstly with the opinions of 10 experts, twice by brainstorming of 55 practitioners, and by the suggestions of participants from 20 hospitals where they were tested (Danchaivijitr 2005). Then the final IC guidelines were applied and adopted in a regional manner based on the hospital policy, budget, the strengthening of ICN and circumstances.

2.4.5 Development of infection prevention and control nurses (ICNs)

IC actions are everyone's responsibility, particularly nurses as they are important in driving IC within the hospital. In section 2.4.5, the development of ICNs and roles of ICNs in both Thailand and England were reviewed to highlight differences and similarities regarding IC systems and roles between two countries.

The development of infection control nurses in England

As mentioned in section 2.4.1 regarding the development of IC and the beginning of the first ICN in 1959, after the outbreak of acquired immune deficiency syndrome (AIDS) and salmonella food poisoning in the 1980s, the Department of Health was prompted to encourage all health districts to appoint ICNs in order to manage an outbreak of infection (Perry 2007). ICNs have played a major role in hospital IC programmes for more than a decade, and have also developed IC practice guidelines for healthcare staff in hospital. Initially, ICNs were required to attend a certified course on IC, approved by the English National Board. After the English National Board was abolished in 2002, diploma and degree courses in IC were developed and adopted in universities based upon the robust framework of the Infection Control Nurses Association (ICNA).

A robust framework for ICNs was developed by the ICNA to demonstrate the competencies of ICNs and to manage IC practices in the healthcare setting (King 2005). Since then, the role of ICNs in the UK has become more prominent. King (2005) proposed three key points to describe the value of strengthening competencies for ICNs. First, competencies provide standards of practice which are recognised and accepted by professionals. Second, competencies provide a framework for developing clinical skills and theoretical knowledge which is invaluable for practitioners. Finally, competencies form a foundation for valid assessment through self-assessment and peer evaluation. Moreover, according to Perry (2007) and Weston (2008), there are core elements of the ICN's role as follows:

- 1) Education and training, e.g. delivering mandatory infection training for staff
- 2) Clinical advice to support healthcare staff, including giving updated news about new outbreaks of disease, and prevention and control guidelines.
- 3) Policy development and implementation, including reviewing and updating existing IC policies and guidelines
- 4) Running an IC link nurse programme
- 5) Promoting hand hygiene programmes
- 6) Monitoring standards of cleanliness
- 7) Audit and service improvement to ensure that the trust complies with management
- 8) Surveillance of both IC practices and other alert organisations
- 9) Investigation and management of infection outbreaks
- 10) Advice for purchasing and contracting
- 11) Occupational health services
- 12) Risk assessment and management
- 13) Serving as a member of various groups/committees, e.g. other ICTs, attending ward manager meetings etc.

The development of infection control nurses in Thailand

In Thailand, ICTs have been widely appointed after the minister of public health initiated NI control as a means to improving the outcomes of the hospital service in 1982 (Danchaivijitr et al 1999; Danchaivijitr et al 2005). However, the important role of the ICT was largely undertaken by hospital administrators. Thus, there was a lack of collaboration between healthcare staff during that time.

ICNs were later appointed to ICTs because nurses worked closely with patients. ICNs in Thailand also attended a certified course of education and training in IC. ICNs in Thailand are responsible for setting policies, strategies and practices regarding IC practices within the clinical setting. They are also responsible for NI surveillance of healthcare staff. Moreover, ICNs are responsible for monitoring healthcare staff's education and for assessing the need for education, and giving advice on any issues regarding IC.

However, there are some obstacles regarding the implementation of IC practice. Jantarasri (2005) and Danchaivijitr (2005) found that these difficulties included inadequate IC knowledge, multiple responsibilities, inadequate cooperation, less administrative support, and inadequate budget and research. Moreover, motivating healthcare staff to follow IC practice guidelines is difficult for ICNs.

In 2005, there were meetings and conferences between ICNs around Thailand. As a result of discussions around the obstacles of IC practice, the official Nursing Association for Prevention and Control of Infection (NAPCI) in Thailand was established in 2006. The NAPCI has since been a centre of information regarding IC practice and helps ICNs around Thailand to handle the ICN's role.

2.4.6 Infection control practice

IC practices have long been recognised as a vital means of preventing transmission of infectious agents. Thus in this section, IC practices will be explored to give an overview of implementation in the clinical setting, how it is effective and how it is difficult to comply. This section will begin with the overall standard guidelines and will then move on to a review of relevant practices. Finally, the difficulties will be discussed.

2.4.6.1 Implementing infection control practice

There have been some implementation difficulties after ICNs adopted IC practice within the clinical setting. Apparently, most of the problems are in relation to personal responsibilities. However, after ICNs attempted to convince healthcare staff that IC is everyone's business and that everyone should receive more information, education and training, the situation seems to have improved somewhat (Weston 2008).

Prevention and control of infection is an integral part of the practice of healthcare staff in a clinical setting as a standard precaution (Wilson 2006). Therefore, healthcare staff, especially clinical nurses who are at risk of exposing patients to cross infection through their practices, should be aware of the routes of transmission and also the techniques to prevent transmission of infectious agents. Knowledge of IC practices is informed by ICNs. As mentioned in section 2.4.5, ICNs are responsible for educating healthcare staff, and also updating staff of any other news and guidelines. Although nurses have been taught standard precautions for preventing and managing infectious diseases during their training at nursing college, some protocols or guidelines require updating. Some hospitals arrange an annual update training day regarding IC practice for both novice and experienced nurses.

In the UK, a three-part programme has been developed as a refresher course for both clinical and non-clinical staff. The programme includes a general overview about infections acquired in hospital. It explores outcomes of infection and standard precautions (Pratt et al 2007). Similarly, in Thailand the standard procedures were added to the update training programmes and additional programmes in certain hospitals regarding special concerns have been implemented, such as preventing infections associated with the insertion of urethral catheters and central venous catheters, particularly in tertiary hospitals (Danchaivijitr 2005).

Standard principles are the basic principles for all healthcare staff working closely with patients. These include the following:

- 1) Hand hygiene, including alcohol-based hand rubs, antimicrobial hand washes and liquid soap.
- 2) Environment hygiene, including standard cleanliness, massive cleanliness, isolated management, and visitor management
- 3) The use of personal protective equipment, including facemask, gloves, cap, protective cloth (gown), and apron
- 4) The safe use and disposal of sharps

Although these are mandatory principles that nurses already know, many studies found that the main problem of IC practices resulted from poor compliance with standard hygiene. Chudleigh et al (2005) found that hand decontamination is considered to be the most effective means of preventing healthcare-associated infections in healthcare staff, but it is poorly performed. Thus, employees are required to undertake standard training while working with patients.

2.4.6.2 Problems implementing infection control guidelines

Even though strict IC guidelines have been set for use in the clinical setting, outbreaks of HCAs still occur in many regions. These outbreaks highlight unsuccessful IC. Problems that contribute to unsuccessful IC can be separated into five major groups that relate to the IC guidelines mentioned in section 2.4.4.

As discussed in section 2.4.6.1, standard precautions, particularly hand hygiene, are the most important issue regarding IC (WHO 2009). Thus, this topic will be discussed in detail first. The other standard precautions will then be discussed in the following section.

1) Hand hygiene

Hygiene is the core component of patient safety and the most effective means for prevention and control of HCAs. Hand hygiene was recognised as early as the 1800s as a factor for reducing infection. As described in section 2.4.1, Ignaz F. Semmelweis is considered to be the father of hand hygiene after he first applied the use of chlorinated lime solution for scrub doctors' hands in 1847. Subsequently, rates of infection in neonates and their mothers after delivery were reduced. There are several studies supporting the notion that hand hygiene is associated with significant reductions in the incidence of HCAI (Larson et al 2009; Backman et al 2008; Flores 2007; Chompook 2006). This is not surprising since most infections in hospitals and other healthcare settings are caused by direct contact, usually via the hands of healthcare staff (Gould et al 2009; Allegranzi and Pittet 2009).

Development of hand hygiene guidelines

Hand hygiene guidelines have been developed by many institutes at international, national and subnational levels. The first hand hygiene guideline was produced by the CDC in 1981. The Association for Professionals in

Infection Control and Applied Epidemiology (APIC) developed and revised these guidelines, forming a new version published in 1995. This new version of the hand hygiene guidelines was adopted in several further researches and evaluation was undertaken. Recently, the CDC reinstated the first guidelines with the formation of the Healthcare Infection Control Advisory Committee (HICPAC), and published this in 2002. Major changes included effective use of waterless alcohol-based antiseptic, and use of soap and water for hand decontamination (Larson et al 2007). These guidelines were revised and published by the World Health Organisation (WHO 2008-2009) and represent the latest hand hygiene guidelines (Larson et al 2007).

When to decontaminate the hands

According to the hand hygiene guidelines reviewed, all agree that whenever the hands are visibly soiled or are considerably contaminated with dirt or organic material, they should be decontaminated with liquid soap and water (Pratt et al 2007; WHO 2009). Some studies have argued that alcohol-based hand gels are a useful method to decontaminate hands in general wards (WHO 2009). This seems to be sufficient for general procedures which are not invasive, but in certain procedures such as those performed in the theatre room, some people might not consider liquid soap or alcohol to be sufficient. Thus, antiseptic solutions such as chlorhexidine gluconate, providine iodine or triclosan may be required for hand hygiene in the operating theatre and for some invasive procedures.

Moreover, in some situations, alcohol-based gels may be less effective in killing some types of harmful microbes. According to some studies, alcohol-based gels may be less effective at destroying certain micro-organisms, such as viruses that cause *C. difficile* (Perry 2007). Thus, healthcare staff should establish which agent is the most suitable for hand hygiene depending on the situation. For example, tap water and soap are appropriate for nurses or healthcare staff who have contact with patients with diarrhea (Perry 2007).

Furthermore, Pratt et al (2007) recommended that the hands should be decontaminated before and after every episode of direct patient care, and Perry (2007) suggested that the hands should be decontaminated before and after any activities that potentially result in contamination of the hands. This includes before and after the following activities: entering and leaving a work area; preparing, handling and eating food; handling invasive devices in patients; administering medications; after handling used linen; an aseptic technique; direct contact with a patient; moving from a dirty activity to a clean activity on the same patient; handling contaminated waste and contaminated equipment.

Factors influencing compliance and non-compliance with hand hygiene

There are many factors influencing hand hygiene compliance. Almost all guidelines adopted in the healthcare setting have been developed specifically for those healthcare settings. These guidelines are tried out and developed until they are valid and acceptable. When this has been achieved they are published as the standard guidelines. Larson et al (2007) found that wide dissemination of hand hygiene guidelines was not sufficient to change practice. Additional studies found that hand hygiene compliance was still insufficient in the clinical setting in both developed and developing countries (WHO 2009; Morrill et al 2006; Banfield and Kerr 2005). According to the literature reviewed, the factors influencing hand hygiene compliance can be separated into two major groups: intrinsic and extrinsic factors.

Intrinsic factors include perception and knowledge of HCAs, social cognition, attitudes, awareness, cultural beliefs, and religious beliefs. Many factors play a role in both compliance and non-compliance with hand hygiene guidelines. For example, time and technique of hand washing will be determined from personal decision making, and many studies clearly show that these are the main factors contributing to hand hygiene non-compliance found in many studies (Collins and Hampton 2005; Ahmed et al 2006; Allegranzi and Pittet 2009).

In addition, low adherence to recommendations, lack of awareness, failure to identify which actions require hand hygiene, and skepticism can also impact on hand hygiene compliance (Boyce and Pittet 2002; Allegranzi and Pittet 2009). In contrast, Beggs and Sleigh (2006) found that a nurse who is strict with hand washing can promote hand hygiene effectiveness. According to the literature reviewed, the most common problem determining non-compliance hand washing in professional groups, including doctors, nurses, healthcare assistants, physiotherapists and technicians, is under-staffing and overcrowding (WHO 2009; Patarakul et al 2005). It appears that personal decision making is a key factor in promoting compliance or non-compliance with guidelines in the healthcare setting.

Extrinsic factors that contribute to non-compliance include inadequate hand washing facilities, understaffing, healthcare worker and patient education, and lack of appropriate infrastructure, particularly countries with limited resources (WHO 2009; Allegranzi and Pittet 2009). Regarding hand hygiene agents, many studies have found that alcohol-based hand rubs are effective in destroying bacterial micro-organisms, including the MRSA pathogen. However, as briefly discussed in the section on when hands should be decontaminated, alcohol-based gels may be less effective in killing viruses. Effective hand decontamination of highly virulent strains of virus (for example non-enveloped viruses) was achieved by physical removal with soap and tap water alone (Sickbert-Bennett et al 2005).

In addition, social perception may influence hand hygiene behaviours (Rikard 2004; Pittet 2004). In psychology, social perception refers to the component of perception that involves understanding individuals and the social world. It is sometimes called social cognition (Berry et al 2004). Within this context, social perception means how society or the general public perceive healthcare services, and there are several ways that healthcare services are presented to the general public, such as mass media, publication and word of mouth. The issue of dirty hospitals has previously been communicated to the general public

via various media, and this issue provoked increased concern within the healthcare system. Consequently, the development of an action plan for cleaner hospitals began in the UK in 2004 (DH 2005).

In conclusion, knowledge, behaviour, attitudes, and beliefs towards hand hygiene need to be improved by multimodal and multidisciplinary approaches. The latest hand hygiene guidelines have recently been revised and published by the World Health Organisation (WHO 2008-2009), and are based upon the concept of patient safety. The guidelines also focus on multimodal strategies in order to promote hand hygiene compliance. To achieve high rates of hand hygiene compliance, healthcare staff need an understanding of infectious disease risks, clear guidelines, education, and access to acceptable hand hygiene products (Larson and Girard 2006).

2) Environment and isolation management

The environment is essential to the hospital image, and is also a component of IC management. Poor cleanliness not only impacts on IC difficulties, but also leads to increased public awareness. Poor environment hygiene results in environmental dirtiness and it directly affects the hospital's appearance. The issue of MRSA and 'superbugs' in hospital was discussed and published in the mass media, news and journals (2880 articles) between 1994 and 2005 (Boyce 2009). Nobody wants to be admitted to a dirty room.

Moreover, Dancer (2009) reported that the hospital environment is associated with an increase in several pathogens, including methicillin-resistant *Staphylococcus aureus*, *C. difficile*, norovirus, and acinetobacter. In contrast, removal with or without disinfectants seems to be linked with reduced infection rates in patients. In addition, a lack of maintenance, poor ventilation and overcrowding can promote cross infection between patients. A recent study revealed that hand-touch sites are regularly contaminated with hospital

pathogens, which are subsequently transferred to patients via the hands (Dancer 2009).

Development of environment and isolation guidelines

To date, several guidelines have been published regarding isolation, and these have been applied in many hospitals worldwide, both nationally and sub-nationally, depending on many factors, such as hospital policies and facilities. The first guidelines for isolation precautions, Preventing Transmission of Infectious Agents in Healthcare Settings, were published in 1996. These have since been revised and the latest version was published in 2007 by the Healthcare Infection Control Practices Advisory Committee (HICPAC).

According to the 2006 Health Act, published by the Department of Health in England (DH 2006), organisations have a duty regarding management of the organisation and the environment, as follows:

- 1) Protection of patients, staff and others from HCAI
- 2) Have an appropriate management systems in place for infection prevention and control
- 3) Provide and maintain a clean and appropriate environment for healthcare
- 4) Assess the risks of acquiring HCAI and take action to reduce or control these risks
- 5) Provide information on HCAs to patients and the public
- 6) Provide information when a patient is referred from one healthcare setting to another
- 7) Ensure cooperation
- 8) Provide adequate isolation facilities
- 9) Ensure adequate laboratory support

In Thailand, the guidelines for isolation precautions and preventing the transmission of infection most commonly utilised in the healthcare setting were developed from the CDC and HICPAC. However, practically, the guidelines will be applied with consideration to hospital conditions, including limited

infrastructure and space, limited budget, and limited numbers of healthcare staff again before using.

For example, there are limited single rooms or isolated rooms in certain units. Isolated rooms are reserved for patients at increased risk of acquiring and transmitting infection. Thus, if there is more than one patient needing a single room when it is not available, the further patients will probably be admitted into the same bay with other patients even though they are infected with MRSA. Cooper et al (2004) found that isolation can substantially reduce MRSA, and Tacconelli (2009) argued that 65% of healthcare staff uniforms or gowns become contaminated during routine care of patients with MRSA. In order to prevent cross infection between hosts, nurses, healthcare staff and visitors need to be more aware of the risks of cross infection and follow the guidelines rigidly.

Factors influencing compliance and non-compliance: environment and isolation guidelines

According to the literature, there are various practical problems in following isolation guidelines, such as lack of knowledge about screening patients and identifying high-risk patients (Tacconelli 2009), lack of single rooms (Rose and Blythe 2008), and lack of knowledge about using antiseptic agents (Sickbert-Bennett et al 2005).

Knowledge seems to be a key factor in preventing and controlling HCAs in this context, but the most important factor is personal responsibility. Lack of knowledge regarding the characteristics of transmission can result in mis-identification of high-risk patients. As Askarian et al (2006) found, knowledge and attitudes are important in preventing contact transmission in hospital but they are not sufficient to induce adequate compliance (behaviour).

Moreover, knowledge of antiseptic agents is also essential in maintaining cleanliness and removing harmful microbes appropriately. Some studies have described different ways of using antiseptic and non-antiseptic agents. For example, alcohol hand rubs and chlorhexidine gluconate are effective for a wide range of bacterial, but not viral, organisms (Sickbert-Bennett et al 2005; Rotter et al 2005).

As a result of these studies, alcohol hand rubs is considered an ideal substitute for regular hand washing in many hospitals, even though some studies argue that it is not appropriate for organic material such as dirt or blood, and it is ineffective against *C. difficile* (Sickbert-Bennett et al 2005). However, these agents are not widely available in hospitals with limited resources, including in Thailand, so managing effective protocols is an extremely challenging issue for ICTs because of differing circumstances between hospitals.

Isolated rooms are essential for separating high risk patients from other patients. Limited space and rooms also influences the capacity to comply with guidelines. There is evidence that the aerial dispersion of some nosocomial pathogens can establish widespread environmental contamination. This may result in the spread of infection in hospital wards (Beggs et al 2008). In order to reduce environmental contamination and NI rates, arranging many beds within hospital wards should be avoided. However, Kleinpell (2009) argued that isolation precautions have adverse effects on both the patient and the delivery of appropriate care. These include less contact with healthcare staff, delays in care, increased depression and anxiety, and decreased patient satisfaction with the hospital service. Thus, the balance between IC practice and adverse effects is a challenge for healthcare staff, particularly in paediatric nursing.

3) Protective equipment use

Use of personal protective equipment, including the use of personal protective cloth (PPC), aprons, masks and gloves, is of utmost importance in the

prevention and control of HCAs. The main propose of wearing PPC and other protective equipment is to protect healthcare staff from blood-borne pathogens and hazardous chemical substances, and to prevent the transmission of microorganisms to both staff and patients. A lack of personal responsibility regarding the use of this equipment can create several problems. For example, failing to wear a mask can facilitate the spread of TB. Additionally failing to wear gowns or aprons can facilitate the transmission of harmful microbes from one host to another.

A few studies have found the colonization of MRSA in the nasal passages of healthcare staff (Bett 1991; Vallande et al 1993; Oh 2006). Also, a recent prevalence study by Askarian et al (2009) on the nasal carriage of MRSA found that nurses were independently associated with the carriage of MRSA in hospital. Therefore, masks are required when there is a risk of blood, body fluid or other secretion making contact with the face or mouth, or when caring for respiratory disease patients (Pratt et al 2007).

Factors influencing compliance and non-compliance: protective equipment

According to the literature reviewed, there appears to be limited research about the adverse effects of not using protective equipment and the problem of non-compliance. Most studies regarding the use of protective equipment described only the benefit of product, such as a review of latex gloves (Lopes et al 2004), and the protective capability of facial masks (Obergh and Brosseau 2008) and N95 masks (Balazy et al 2006). Seemingly, the issue regarding the use of protective equipment has not been of great concern in countries where there is full support from the government, but this issue has been widely discussed in countries where there are limited resources.

However, major problems regarding the use of protective equipment identified from the literature include a lack of knowledge about the risk of transmission of

micro-organisms and inconsistent use of protective equipment (Weston 2008). For example, gloves are used for two main purposes; preventing contamination of healthcare staff from microbes and organic materials such as blood, secretion and excretion, and also for preventing transmission of micro-organisms to patients during invasive procedures. Masks are used for two main purposes; to prevent the expulsion of respiratory droplets and to protect healthcare staff from blood or body fluids. However, there are times when staff do not make appropriate decisions about when to use gloves or other protective equipment.

4) The safe use and disposal of sharps

Waste products in the healthcare environment are separated into two types; household waste and clinical waste, and they must be segregated properly in terms of preventing cross-contamination. In the clinical setting, all healthcare staff play a vital role by ensuring that they segregate waste appropriately. Failure to comply with procedures including segregation, collection and storage of waste can cause public concern as well as financial penalties as a result (Weston 2008).

The disposal and safe use of sharps is a necessary component of personal and environment standard precautions. Failure to observe proper procedures can cause injury both to healthcare staff and patients. Injuries from sharps account for approximately 17% of all reported injuries to healthcare staff in the UK (National Audit Office 2003). Such injuries place healthcare staff at high risk of blood-borne infection as a result. Up to 40% of sharps injuries occur during actual practice and before disposal (National Audit Office 2003), thus healthcare staff should take responsibility to comply with the principle of using and disposing of sharps appropriately. Healthcare staff should be informed regarding the management of sharps injuries, including risk assessment and appropriate action.

5) Safe handling of linen, equipment and healthcare staff' uniforms

Although there is limited evidence to suggest that linen is associated with the outbreak of infection, linen can be heavily contaminated with micro-organisms and cause cross transmission to staff who handle laundry. A recent study revealed that spores of *C. difficile* are capable of surviving the temperatures and chemical treatment of typical hospital laundering. In addition *C. difficile* spores can appear on bed linen during laundering, particularly if the treatment does not eliminate all spores (Hellickson 2008).

Thus, linen management guidelines should be provided for both the handling of used linen and the storage of clean linen. Clean linen should be stored in a cupboard or container with the door kept closed, should not be placed on contaminated surfaces, and should not be carried by healthcare staff as harmful micro-organisms may be present on their uniforms or aprons. It should be taken to the patient's bedside by trolley (Perry 2007; Weston 2008). Used linen should be separated into levels including visibly soiled, such as used linen without visible contamination with blood or body fluid; soiled linen contaminated with body fluid such as urine or feces; infected linen contaminated with blood or infectious pathogens, and other types of linen such as staff clothing and scrubs. They will be sent to the hospital laundry and dealt with appropriately.

Healthcare staff uniforms are at risk of transferring infection, as described in some studies (Callaghan 1998; Perry et al 2001). Tacconelli (2009) argued that 65% of healthcare staff uniforms or gowns become contaminated during routine care of patients with MRSA. A number of small studies have suggested that neckties may facilitate the spread of infection between doctors and patients, and white coats have been shown to be colonized with multiple organisms (Palazzo 2010; Nurkin 2004).

However, there is a lack of robust evidence to suggest that uniforms are a cross-infection risk. This was supported by a recent review from Wilson et al (2007), which looked at the epidemiological link between contaminants on

uniforms and cases of HCAI. This review found no evidence to support the belief that uniforms act as vehicles of cross-infection. Further studies are required to establish whether the using of healthcare staff uniforms (Wilson et al 2007).

According to the EPIC2 guidelines with regard to the wearing of protective clothing during any patient contact, uniforms should be changed when they become heavily contaminated with blood or body fluid. Thus, there are different practices in some hospitals depending on their circumstances, and staff should adhere to the local recommendations and their own published uniform policy. In England, there is a 'bare-below-the-elbows' and tie-less dress-code policy, following the Department of Health's guidelines on staff uniforms in September 2007. Palazzo (2010) argued that although patients are aware that doctors' clothing is important, neckties and white coats were not expected.

In addition, according to the EPIC2 guidelines, nursing staff should wear a clean uniform every day and should wear protective clothing appropriately when in contact with patients in order to prevent the risk of contamination. However, if uniforms are laundered at home, they should be separated from other clothes and washed at a minimum temperature at 60° C, and clean uniforms should be transported to work in a manner that protects them from contamination, such as in a plastic bag (Perry 2007).

Decontamination of equipment, the environment and medical devices

Decontamination includes cleaning, disinfection and sterilization of both the environment and the medical setting. The method of decontamination used depends on the type of equipment. For instance, certain medical equipment designed to be re-used requires a combination of cleaning, disinfection and sterilization.

Cleaning is the process that physically removes dirt or organic matter such as blood and body fluid, but does not necessarily destroy micro-organisms from

the surface. However, it is a prerequisite before disinfection and sterilization because the presence of organic material can reduce the effectiveness of disinfectant and sterilization. Cleaning can be either a manual process and a thermal washer-disinfectant or ultrasonic cleaner. Manual cleaning requires the use of hot water and detergents at the correct temperature and concentration in order to remove 80% of the microbial bio-burden from the equipment. Poor cleaning techniques will merely redistribute dirt and micro-organisms rather than remove them (Weston, 2008). Cleaning is also fundamental in the management of the clinical setting. Poor hygiene can directly affect the public. Thus, the clinical environment including the patient's unit, store room, toilet and ward sluices should be kept tidy, particularly in an outbreak situation. Increased levels of cleaning are required to reduce environmental reservoirs of infection. The EPIC2 guidelines recommend the additional use of hypochlorite for cleaning for this purpose.

Disinfection reduces the number of micro-organisms, except bacterial spores, and the use of thermal wash disinfectant is the most effective method of disinfection, although chemical disinfectants are frequently used. Disinfection is required for all items which have been in direct contact with mucous membranes because of risk of contamination. Organic materials such as blood and body fluid have to be manually removed by cleaning before using disinfection. The proper dilution ratio of detergent and amount of soaking time is important for effective disinfection by this method.

Sterilization is the complete eradication of all micro-organisms, including inactive viruses, vegetative bacteria and bacterial spores. Sterilization is required for all items which are inserted into the skin and sterile areas. The best method for sterilization is by steam under pressure, known as autoclave, which is often used in invasive procedures. Gould (2004) found that less than 1 out of 10² micro-organisms remain after autoclave.

Compliance and non-compliance regarding single-use equipment mostly depends on supportive resources, such as budget, within the hospital. Moreover, the role and responsibility of individual healthcare staff is crucial to determine whether staff will engage in such practices. Hospitals in developed countries adopt a single-use device in order to prevent cross-transmission between patients. In contrast, hospitals with limited healthcare budgets have to reprocess and re-use some medical items in order to reduce costs. However, the re-use of single-use medical devices creates major infection risks and, furthermore, such devices may malfunction (MHRA, 2006). The single use of devices might be most effective for both preventing HCAs and for ensuring the quality of the device.

This study intends to explore factors influencing IC practice in Thailand and England where there are various differences in terms of culture. Therefore some differences in culture between the two countries will be discussed in the following section.

2.5 Culture

Culture has been defined by various anthropologists and psychologists.

“Culture is often described as something, including knowledge, belief, morals, laws, customs and any other attributes acquired by a person as a member of society”.

(McLaren 1998, p.64)

A current definition is given by Shiraev and Levy (2010);

“Culture is a set of attitudes, behaviours, and symbols shared by a large group of people and usually communicated from one generation to the next”.

(Shiraev and Levy 2010, p.3)

Moreover, Nemetz-Robinson (1985) made the distinction about definitions of culture. He argued that culture can refer to the categories of behaviours and

products that reflect an understanding of culture as observable phenomena, and also the variety of ideas reflects a notion of culture as not observable. For example, something is implicit, but can be explicitly described.

This concept relates to the explicit and implicit characteristics of culture described by Shiraev and Levy (2010). Explicit characteristics of culture are the set of observable acts which are regularly seen in the culture. For example, the overt pictures, customs and typical behavioural responses of nurses in the clinical setting. Also, implicit characteristics refer to those underlying these regularities on the basis of a consistent pattern of explicit culture. This can be related to the organisation principle that is advocated to the explicit regularities. For example, particular behavioural expectations from the organisation may drive nurses to observe best practice with patients.

Cultures can be separated into two types, traditional cultures and modern cultures or non-traditional cultures (Shiraev and Levy 2010). Traditional culture remains a cultural construct rooted in traditions, rules, symbols, and principles, whilst modern cultures continue to evolve themselves based on technologies, new principles, ideas, research-based evidence, political change and even fashion. Traditional cultures tend to be confined in local and regional boundaries while modern cultures tend to be absorbing and dynamic. The differences between people in the capital city and regional areas can be clearly seen in certain countries, including Thailand.

Working across different cultures poses a common problem of negotiating cultural variations in values, cognition and relational styles (Sanchez-Burks & Lee, 2007). For example, one must adjust for differences in the ways people interpret feedback, value social harmony versus task efficiency, and coordinate differences of opinion. In order to understand why individuals are different, the following section will describe the development of individuals and social behaviour based upon human psychological phenomena.

2.5.1 Human psychological phenomena

Michie *et al* (2005) found that psychological theory such as beliefs, social professional role and identity, and motivation are difficult to implement. Foy *et al* (2005) found that behavioural theory such as behavioural control, behavioural intention, attitude, and subject norm, can effectively bring about quality improvement. In order to understand human behaviours which develop between different cultures, the following sections, 2.5.1.1 and 2.5.1.2, discuss the development of individual and social behaviour. Moreover, relevant concepts, such as the principle of consistency, are presented in this section.

2.5.1.1 Development of individual

Obviously, human beings acquire patterns of behaviour through experiences that are characteristic of the context in which they live. This means that human behaviours develop depending on various factors. The development of individuals is often called 'ontogenetic development' which is relating to the origin and development of individual organism. (Berry *et al* 2004).

Early development starts after childbirth. Individual development can be considered as the consequence of interactions between the biological organism and environment of influences. This means experiential components of behaviour form in relation to biology and surroundings. As Skinner (1957) argued, the environment plays a vital role for human ontogenetic development. This concept was identified by Cavalli-Sforza and Feldman (1981), and it was termed cultural transmission.

Cavalli-Sforza and Feldman (1981) argued that the key factors influencing children's behaviours are parents, peers, other adults and socialisation. Cultural transmission from parents to their offspring is termed vertical transmission. Meanwhile, a child can learn from peers, other adults and socialization among subsequent generations employing teaching and learning processes. This is called horizontal transmission and oblique transmission.

Regarding the individual's development, it is clear that individuals are different depending on the biological organism and environmental influences. This is why some people are better at doing certain things than others, and why some nurses make better decisions than others. This is because when a child grows up and matures, many things develop including intelligence, cognition, attitudes, values and beliefs. These also depend on cultural transmission.

The individual includes attitudes, beliefs, values which can influence decision making and personal behaviour (Kallgren and Wood 1986). Attitudes were defined by Secord and Backman (1969) as 'certain regulations of an individual's feelings, thoughts and predisposition to act toward some aspect of his environment'. Feelings represent the 'affective component' of an attitude, thoughts the 'cognitive component' and predispositions to act the 'behavioural component'. This suggests that attitudes reflect an individual's tendency to feel, think, express or behave in a positive or negative manner towards the object of the attitude (Ajzen 2001).

Moreover, Shirave and Levy (2010) argued that attitude includes beliefs, values, general knowledge, opinions, superstitions, and stereotypes. This relates to Eagly and Chaiken (1998), who defined attitudes as groups of beliefs focused around a subject which predispose a particular behaviour. Meanwhile, behaviours involve a wide variety of norms, customs, traditions, roles, habits, practices, and fashions. It is difficult to distinguish attitudes from other related concepts, including values and moods (Arnold 2005). Values are an individual's beliefs about what is good or desirable in life. Moods are generalized affective states that are, or explicitly associate with, the particular events which may have originally induced the mood (George and Jones 1997). Attitudes, values, and moods are different in perspective time using, dynamism, and focus, as summarized in the table1 below.

Table 1 Values, attitudes, and moods

	Values	Attitudes	Moods
Time perspective	Future (how things should be)	Past (my past experience of a target)	Present (How I feel right now)
Dynamism	Stable (little change over long period)	Evolving (slow or steady change)	Fluctuating (substantial change over short period)
Focus	General (guide approach to life)	Specific (directed towards a specific target)	General (how I feel about everything right now)

Source; Adapted from J.M. George and G.R. Jones (1997) 'Experiencing work: values, attitudes and moods', Human Relations, Vol 50, pp.393-416.

A discussion of values, attitudes and moods is useful to explain why attitudes do not always predict behaviour at work. A person may have negative attitudes toward his or her job or colleagues, but he or she still helps others because he or she places high value on being responsible and cooperative (Arnold 2005). Attitudes are a person's predisposition resulting from various factors. Attitudes are developed throughout the life span, from conception to death. As described in section 2.5.1.1, the biological organism and the environment are crucial factors in the development of personal experiences throughout cultural transmission and socialization. Environmental conditions affect an individual's sensations and perceptions. For example, parents' attitudes and beliefs are translated into their behaviours, and they can eventually influence children's attitudes and beliefs. When the child is grown up, socialization is the process by which the individual becomes a member of the particular group.

In this study, attitudes and values are important factors regarding IC practice. For example, when a new infection guideline is introduced into the clinical setting, the cognitive component refers to individual's perception of the new guideline. The personal effective component will be expressed by various

feelings, such as excitement or boredom. The behavioural component might be expressed as what the individual says or does. A nurse might say she or he believes in this guideline. In contrast, if they have a bad attitude towards their jobs or their patients, they would not be aware about the effect occurring after their practices. Certain nurses might follow the guidelines properly if their values are high whilst some might comply inconsistently. This will be discussed later in section 2.5.1.3.

Strong attitudes and beliefs in an individual are very important in a group or organisation. Argyris (1992) argued that organisational learning is invaluable when working to understand team dynamics, conflict and behaviour. This is because people hold some attitudes more strongly than others. This results in individual differences. In addition, people within organisations might use defence mechanisms, dialogue, resistance to change, and participation. As Shirave and Levy (2010) argued, people tend to focus on things that are important for survival or accomplishment of their goal.

However, attitudes can be changed through persuasion (Arnold 2005). This relates to Snow (2006), who found that role models can change an individual's attitude. Moreover, Michie et al (2005) found that there are twelve domains associated with behavioural change: 1) knowledge, 2) skills, 3) social/professional role and identity, 4) beliefs about capabilities, 5) belief about consequences, 6) motivation and goals, 7) memory, attention and decision processes, 8) environment context and resources, 9) social influences, 10) emotion regulation, 11) behavioural regulation, and 12) nature of behaviour.

As Michie and colleagues described, even though individual attitudes and beliefs are significant, attitudes can be changed by several factors (Michie *et al* (2005). Thus, the relevant issues regarding social behaviours and social influences that determine personal behaviour will be described in the next section.

2.5.1.2 Social behaviour

Sociocultural context is significant to personal behaviour development. This is because human intimacy and prolonged interpersonal relationships promote the development of shared meanings, and the creation of the institution and artefacts (Berry et al 2004). Social behaviour obviously links to the particular sociocultural context in which they develop. For example, greeting procedures (bowing, hand shaking or kissing) are used widely between families and friends in Western countries. This is an example of the influence of cultural transmission on our social behaviour.

In every social context, a person occupies a position for which certain behaviours are expected. These behaviours are called roles, such as the roles of student and the roles of nurses. Each character occupant is the intent of sanctions that exert social influence, even pressure, to behave according to the social norm or standards (Berry et al 2004).

Social influence is the effort on the part of individual to modify the behaviour or attitudes of one or more people. Shiraev and Levy (2010) described social influence as the behavioural change that one person imposes on another, intentionally or unintentionally. As a result, the changed person perceives themselves in relation to the motivator, other people and society in general. There are three components of social influence, including conformity, compliance and obedience.

Conformity is a form of social influence in which individuals change their attitudes and behaviours to adhere to a social norm. Norms are rules of the particular group indicating how the members should behave. Conformity is a universal phenomenon, which has certain variations across cultures. There is a positive correlation between individualism and economic wealth (Shiraev and Levy 2007). Conformity can range from slight to extreme change. For example, someone might even change his or her beliefs, values, and attitudes to be like those of peers and admired superiors. According to the literature reviewed,

conforming is high in agricultural societies and low in hunting and gathering societies. It is typically lower in upper middle-class groups, and higher in lower socioeconomic groups. Moreover, it is also high in the stratified societies (Shiraev and Levy 2007).

Compliance is how an individual does something that he or she is asked to do by another. Compliance is analogous to conformity, which could be motivated by a desire to achieve reward or avoid punishment. The thought of social punishment may cause a person to comply even they really do not intend to (Arnold 2005; Shiraev and Levy 2007). However, an individual may choose to comply or not to comply, depending on his or her decision making. Moreover, Shiraev and Levy (2007) argued that compliance can be suggestive of personal weakness and desperation. If people are very poor, desperate and depressed then the promise of a convincing solution might force them to comply because it brings people hope.

Obedience is a form of conformity when a person simply follows orders. It is different from compliance in that obedience is obeying a request from someone who has power or authority. You believe that you have no choice in obedience, while you have some choice in compliance (Milgram 1983). It is more likely that rates of obedience in countries with high power distance are higher than in countries with low power distance (Shiraev and Levy 2007).

In addition, as described in the previous section, attitudes do not always predict behaviour at work. Someone who has a bad attitude might follow the rules properly because he or she has a high value of working or he or she may comply because of the thought of social punishment. Values are inferred constructed, whether held collectively by societies or individually by a person (Berry et al 2004). Attitudes, beliefs and values are supported by each other. If they are not correlated, it could cause conflict in an individual. The following section will describe more regarding the result of conflict, known as inconsistency.

2.5.1.3 Consistency theory

Festinger (1957) and Heider (1958) purported that our internal systems (value, beliefs and attitudes) all support one another. These are also supported by external situations. If they are balancing, then we will have a comfortable state of affairs. In contrast, the discomfort of cognitive dissonance establishes when things are out of alignment, which leads people to try to reach a maximum practical level of consistency in their world.

Attitude-behaviour consistency

Kallgren and Wood (1986) suggested that our attitudes (predispositions to behaviour) and actual behaviours are more likely to align if the following factors are true:

- Our attitude and behaviour are both constrained to very specific circumstances.
- There have been many opportunities to express attitudes through behaviour.
- We have a history of attitude-behaviour consistency.
- The attitudes are based on personal experience, rather than being copied from others.
- The attitudes are proven by past experience.
- There is no social desirability bias, where the presence of others will lead us into uncharacteristic behaviour.
- We are low in self-monitoring, so we do not distract
- The attitude is strongly held and is around core beliefs.

According to consistency theory and attitude-behaviour consistency, this might apply to nursing practice regarding compliance with IC guideline because of inner drive such as beliefs, attitude or values. For instance, if nurses do not believe in certain guidelines or there is conflict with the guidelines, they might not comply with them consistently. McFarlin and colleagues (2008) observed nurses and healthcare staff in the clinical setting, and found that there was less

than 50% compliance with proper hand hygiene among the staff. They tried to incorporate an educational approach to hand hygiene emphasizing three underlying themes of activity, involving the healthcare staff in the learning process, making learning fun, and rewarding positive behavioural changes. As a result, it increased hand hygiene compliance from 60% to 86%.

According to all the theories described above, there are many factors promoting compliance and noncompliance in humans. This also relates to how someone makes a decision to do something, as people habitually make decisions in different ways. Thus, the following section will briefly describe the principle of decision making and how someone can effectively make a decision.

2.5.1.4 Decision making

All of us have to make decisions every day. Decision making can occur at a simple level to a complex level. Decision making can be regarded as a cognitive process resulting in the solution of a problem achieved in different ways.

Several factors are involved in developing effective decision making skills within a career, including self-awareness or personal factors and knowledge (Arnold 2005; Berry et al 2004). In terms of self-awareness, a person needs to have an accurate appraisal of her or his own strengths and weaknesses, values, likes or dislikes. Knowledge is the result of education and experiences regarding the problems or situations which require the decision. For example, if nurses have to make a decision in the workplace, they should have knowledge of caring and relevant knowledge in their career.

Moreover, Hancock and Eason (2006) studied the decision making processes of nurses when extubating patients, using the ethnographic approach. This study found that cultural, contextual and personal characteristics combined to form complex decision making processes. The contextual factors found within this study include hierarchy, relationships, power, leadership, education, experiences and responsibility. Additionally, Fry and Stainton (2005) studied an

education framework for triage nursing, and they also found that decision making processes interweave with cultural knowledge. For example, understanding the meaning of the patient group can help nurses to justify and sustain beliefs of efficiency, timeliness and equity. Then these can promote effective decision making.

Moreover, according to cross-cultural psychology, decision making varies across different countries. For example, Mann et al (1998) studied coping styles in six different countries, including Australia, New Zealand, USA, Hong Kong, Japan and Taiwan. The results showed that the individualist countries, of which the majority are developed countries, express more confidence in coping with problems than the collectivism countries, including Hong Kong, Japan and Taiwan (Mann et al 1998).

2.6 Cross-cultural study

Cross-cultural study is a specialization in anthropology and the scientific study of variations in human behaviour, taking into account the ways in which behaviour is provoked by cultural context. It has been used by social scientists of many disciplines, particularly cultural anthropology and psychology. There are a number of definitions in the literature, and these points to some complexities:

"Cross-cultural research in psychology is the explicit, systematic comparison of psychological variables under different cultural conditions in order to specify the antecedents and processes that mediate the emergence of behaviour differences".

(Eckensberger 1972, p 100)

"Cross-cultural psychology is the empirical study of members of various culture groups who have had different experiences that lead to predictable and significant differences in behaviour. In the majority of such studies, the groups under study speak different languages and are governed by different political units".

(Brislin, Lanner and Thorndike 1973, p 5)

There are three main goals of cross-cultural study, according to Berry (2004). First, the psychologist seeks to transport hypotheses and findings to other cultural settings in order to test their validity and applicability in other groups in order to explore human beings. The second goal is to explore other cultures in order to understand cultural and psychological variations, which are different from the prior culture. The third goal is to attempt to gather and integrate the knowledge into broadly based psychology or universal psychology that will be valid for a wide range of cultures.

This study aims to explore two different cultures, which might affect different IC practices. In order to understand what culture is and what is involved, the definition of culture and relevant issues were reviewed.

2.6.1 Comparative cultures

As this study tends to explore factors which influence IC practices within different cultures including Thailand and England, this section provides relevant cultures and life styles which could influence IC practices in paediatric patients in Thailand and England. Moreover, some background information regarding geography and population are provided in order to briefly present differences between developed and developing countries.

2.6.1.1 The overview of England and English culture

1) Geographic background

England is one of the members of Great Britain, which includes Scotland, Ireland, England and Wales. English people are originally from the country of England, but British people are those who live in Great Britain in the United Kingdom (UK). The total area of England is 130,410 sq km (50, 352 sq mile). London is the capital and the largest city in the UK. In mid-2005, there were

approximately 60.2 million people in the UK, and 50.4 million lived in England (Office for National Statistics (ONS) 2007).

The UK is the third-largest economy in the European Union and also the sixth-largest economy in the world. It is also greatly developed with extensive social welfare services with residents having a relatively high standard of living. This promotes high employment rates in the UK, and inflation levels are the lowest in the European Union (Work Force 2008).

Education is a key factor contributing to knowledge and literacy. It is noteworthy that 99 % of English people can read and write because nearly 100% of them attend school, which is compulsory (DH 2003). Moreover, with advances in technologies such as Internet and other media sources, there is a wealth of healthcare information.

England has a variable climate, changing from day to day. Thus, it is difficult to predict the weather in advance. The overall climate in England is called temperate maritime because it is subject to frequent changes but few extremes of temperature. Rain is fairly well distributed throughout the year.

English is the official language of the UK. It is also the first language employed worldwide as the international language to communicate between countries.

Christianity is the official religion in England (71.1%), as practiced by the Church of England (Anglican). These are Protestant Churches. Other Christians in this country also include Roman Catholics and Methodists. The Queen (the British Monarch) is 'Supreme Governor of the Church of England'. Moreover, there are other religions such as Muslim (2.7%), Hindu (1.0%), Buddhist (0.3%), Jewish (0.5%), Sikh (0.6%) and others (Census, Office for National Statistics 2001).

2) Healthcare system

The healthcare system in England is driven by the Department of Health (DH). It serves all people including students from abroad. The National Health Service (NHS) was set up to provide free healthcare for all the residents of the UK. The DH is responsible for the overall policy, planning, regulation and inspection of the health service.

Healthcare services are separated into 2 levels, primary healthcare and secondary healthcare, provided by the local NHS trusts. Primary healthcare covers regular health services such as GPs' surgeries, dentists and opticians. These are delivered by "primary care trusts". Secondary healthcare provides specialized services such as hospitals, mental health services and ambulances. These are delivered by a variety of other NHS trusts. In addition, there is home care service, which looks after people at home such as the elderly and people with chronic illness or disabilities, and is sometimes referred to as the community healthcare service.

3) English culture

English culture and traditions originated hundreds of years ago. English customs and traditions are well known all over the world; most notable is their polite characteristic. Basic politeness, such as "please", "thank you", "excuse me" are frequently expected. Moreover, when people think about native English people they often think of people who like drinking tea and eating fish and chips. These seem to be the English image for others. However, according to the census survey by the Office for National Statistics (2001), about eight percent of the population, or 4.6 million people, in Britain today are from other cultures and ethnicities. Thus, Britain is regarded as multicultural.

One custom which may relate to the transfer of infections is the way in which people greet each other. English people may be considered to be reserved

when greeting other people. A greeting can be a bright “Hello”, “Hi” or “Good morning”, when meeting other people, but these seem to be informal greetings and are used between people who know each other. The most usual form of greeting among the English people is a handshake. The kiss is only done when they meet friends, whom they have not seen for a long time or between family members. In England, one kiss is enough while other countries in Europe, such as the Netherlands, have three kisses.

Previously, most families in England were nuclear families with two married heterosexual parents and their legal children. Divorce was rare and people who married tended to stay married. During the twentieth century, family life in England changed substantially. According to Barnett (2007), in 2006, 24% of children live with only one parent. This proportion is three times higher than in 1972. Couples are also starting families without getting married. The wedding ring is the symbol of people who are married.

2.6.1.2 The overview of Thailand and Thai culture

1) Geographic background

Thailand, previously well known as “Siam”, is a nation of approximately 66.32 million (2008) people, and is situated in the central area of Southeast Asia. It is bordered to the north and east by Laos, to the west by Myanmar (Burma), to the southeast by Cambodia, and to the south by Malaysia, covering an area of 513,115 (sq.km) (Office of the Prime Minister 2007; MOPH 2007). Thailand is a predominantly Buddhist country. It has a distinctive Buddhist culture and Buddhism pervades in almost all aspects of everyday cultural activities (Mulder 2000).

Thailand is divided historically and culturally into four main regions: north, northeast, central plains, and south, which are further subdivided into 76 provinces. Each region exhibits different variations in subcultures. However, the

country is unified by its devotion to both the monarchy and to Buddhism. The capital, Bangkok, is situated in the central part. Most Thai people live in rural areas (33.7% of the population, including Bangkok), and there are extreme differences between the central area and rural areas, including in education and income. There are other slight differences such as beliefs and living styles. For example, in rural areas most people go to the temple on every Buddhist day while people in the cities are less likely to go.

The Thai economy has grown rapidly in the past two decades (Choowattanapakorn 1999), resulting in “Civilisation”, “Westernisation” and the rapid expansion of the tourist trade. Around 40% of Thailand's workforces are employed in agriculture (data based on Bank of Thailand). Thailand is the largest exporter of rice around the world. Thailand's increasing transformative manufacturing sector is the largest contributor to growth. Industry has rapidly increased in production, including computers and electronics, and many high-technology products. Due to the massive growth in the economy, the lifestyle of Thai people has changed drastically. In addition, economic factors also have changed the structure of Thai family and also the healthcare system.

The government strongly supports compulsory education for grade 1-12. It has been found that 94.9 % of Thais can read and write. Poverty and living in rural areas is the most common problem in relation to literacy. Moreover, 90.5% of illiteracy is in females because Thai values support male rather than female education (MOPH 2007). For example, males lead the whole family after getting married; therefore males take first priority to study. Thus in limited-income families, if there are many children, a boy will be supported first. This value is currently changing in Thai society because of the influence of Western union and human rights.

Thailand is a tropical country, thus, the weather is slightly warm and humid. The weather is hottest in March and April with an average temperature of 28 to 38 degrees Celsius, and humidity averaging between 82.8 – 73%. There are three

main seasons, summer season from March to May, rainy season from June to October, and winter season from November to February.

Approximately 94.5 % of Thais are Buddhist; 4.5 % are Muslim; 0.7 % are Christians; 0.3 % are Hindus and others (MOPH 2007). 80 % of Muslims are settled in three provinces of the southern region, namely Pattani, Yala, and Narathiwat, near the border of Malaysia. "To do the right thing" (kusala kamma) is a main point in the teachings of Buddhism. Thai people, therefore, respect the law of kusala karma as the law of cause and effect. For example, Buddhists are taught that performing good deeds affects their karma and that they may make merit by practising morality (sila), mental discipline (samadhi), and wisdom (panya) (Chandra-ngarm 2003). Thais usually go to the temple, or "Wat", on the holy day, called Wan Phra, four times a month according to the lunar calendar, in order to offer food, listen to monks' sermons and practice meditation (Chandra-ngarm 2003).

2) Healthcare system

The Thai health system is based upon a vision, "Aiming for a sufficient health system in creating good health, good services, good society, happy sufficient livelihood in a sustainable manner" (MOPH 2007). The national policies regarding healthcare development were put forward by the Ministry of Public Health (MOPH). However, there are many divisions supporting the MOPH which set out the goals and strategies for the healthcare system around Thailand.

The healthcare system in Thailand is separated into 3 levels, primary care, secondary care or general hospital and Tertiary care and university hospital. Mandatory healthcare insurance is provided for all Thais within 30 bath projects supported by the government. It means patients will only pay 30 bath (less than £1) when they meet the doctor and receive medicines.

Only a few doctors or GPs work in primary care in the same way that they work in developed countries. Thus, only nurses work for a small primary care unit. If there is something that nurses are not able to deal with, then the patient will be referred to a secondary hospital or tertiary hospital, respectively. There are several hospitals specifically for the elderly, but these are seemingly insufficient because of limited beds and staff. In addition, home healthcare in Thailand has only been run by private hospitals and private nursing home care. This service, therefore, is mostly only utilized by wealthy families. Thus, elderly people normally stay at home and spend the rest of their lives with their family rather than in home care or in hospital. If they become ill, then they will be brought to the hospital.

3) Thai culture

“Wai” or “Sawasdee” is verb for the common greeting that Thai people use to show respect to each other by raising both hands, and then joining the palms with the fingers pointing upwards and slightly bowed. This is the routine for the younger person, who is junior in age or lower in status, to be the first one to express the “Wai”, and the senior person will respond the “Wai” even though it is not necessary to return “Wai” to the younger. This greeting is also extended to strangers, and “Wai” and smiling seem to promote Thailand to be well known as “the land of the smile” in the foreigner’s view. This greeting is always used in all situations even in the hospital. Doctors, nurses and healthcare staff also “Wai” patients first if they realise they are younger than the patients. On the other hand, patients and visitors will “Wai” healthcare staff first to show that they respect them as professionals even though the patient may be older than the healthcare staff. This greeting is also useful to develop a relationship between Thai people because of sincere pleasure at an introduction.

Family is the cornerstone of Thai society, and is more closely connected than in Western cultures. Most families in the large cities have become nuclear families. The average family size has dropped from 6-8 people to 3-4 people in

2004 (MOPH 2007). However, most families, particularly in the country and rural areas, are still extended families which include the grandfather, grandmother, father, mother and children.

Parents are always the head of the family and the children are always taught to honour their parents. After the economic growth, the increase in the nuclear family can be seen in central and industrial areas. However, if any of the family members get sick, other family members, including grandparents, parents, and siblings will pull together in support. As can be seen in many hospitals, one patient usually has many visitors coming to visit them.

Thai people respect social relationships as hierarchical. For example, parents are superior to their children, teachers to their students, bosses to their subordinates, and laymen to professionals. Similarly, in hospital a patient will always respect doctors more than nurses, particularly in the rural areas because they think the doctor is the boss, and that the doctor is the only person who can help with their illness. Undoubtedly, people in rural areas will respect the doctor as their “God” when they have been admitted to hospital. However, after “Westernisation”, this idea is decreasing where high technology and education are provided. However, the belief regarding the doctor still remains in certain groups of people, particularly in low-educated people and the elderly. However, hierarchical society does not decrease relationships between the patient and healthcare staff because they always pay respect to each other as a family member. For example, patients “Wai” nurses to pay respect to them as professionals, but nurses “Wai” patients as one of their cousins. In addition, healthcare staff usually call patients “brother”, “sister”, “uncle” or “aunt” when they are in contact with patients because Thai people are taught to respect others who are older or younger than them in those terms.

Moreover, “Kreng jai” is the hierarchy of social rules and protocols, which very tightly govern social life in Thailand. “Kreng jai” is the means by which Thais maintain social harmony and conformance and avoid conflict. It is the means by

which community and spiritual harmony become the accepted way of life (Bechtel and Apakupakul 1999). “Kreng jai” governs family structure, habits and social interaction from early childhood. It not only affects hierarchical society, but it also provides an important mechanism for social support.

Thai custom and behaviour are mostly products of the Buddhist religion which is taught from early childhood. For example, Thai people avoid touching anyone on the head because the head is considered to be highly sacred. Thai people do not point their feet to anyone or anything because it is the lowest part of the body and it is not polite, whereas the fingers or hands can be used. If someone behaves like this, it means that he or she does not respect others. Moreover, to stir anger in someone might attract the rage of the spirits, this encourages people to avoid confrontations and look for compromises in difficult situations.

The influence of western culture has led to the breakdown of authentic Thai values such as giving more weight to materialism, imitating foreign-style consumption and being a couple before getting married. This creates many problems such as an increase in single parents and teenage pregnancies. However, the majority women still adhere to the idea of remaining a virgin before marriage. Moreover, being a couple before marriage is unacceptable in Thai society and Buddhism.

When couples get married, they celebrate in Buddhism by inviting monks to bless the couple at home surrounded by their families, relatives and friends. A party is usually organised for the evening but this depends on the couple. There is no official, visible symbol of marriage such as the wearing of a ring as in Western countries, but some couples will wear a ring or necklace because of the influence of western culture.

In summary, culture includes knowledge, value, belief, morals, laws and customs. Culture is established by social influence, so different social influences can produce different cultures. Life styles in Thailand and England are very

different, having different customs, traditions, and cultural and religious beliefs. Most Thais believe in Buddhism while most English people believe in one God. Moreover, different levels of education can result in different life styles. For example, people who obtain a high level of education are more likely to take good care of themselves. Similarly, people who earn good incomes can promote a good quality of life compared to people who have lower incomes.

2.7 Chapter summary

Healthcare Association Infections (HCAs) are infections acquired during hospital admission. The main cause of HCAs is a pathogen, whilst there are various factors that may contribute to HCAs, including intrinsic and extrinsic factors. There are many factors influencing healthcare staff ability to follow the guidelines for preventing and controlling HCAs. The most important of these appear to be intrinsic factors related to personal responsibility and individual behaviours of healthcare staff. HCAs impact directly on the patient and also on healthcare staff, the healthcare system and public confidence. HCAs occur most frequently in intensive care where patients are vulnerable. In terms of vulnerability, neonates and paediatric patients are more vulnerable than adult patients. Thus, HCAs in paediatrics were more concerned than the past.

According to the literature review, rate of HCAs vary between countries (Callaghan 2007). This includes HCAs in paediatric patient in England and Thailand. As England and Thailand are different in geographic background and cultures, these may contribute to different IC practices as a result.

CHAPTER 3: RESEARCH METHODOLOGY

3.1 Introduction

Table 2 The research aims

- To identify the factors which influence infection control (IC) practices in paediatric wards in England and Thailand.
- To compare the factors identified in both countries in order to make recommendations for best practice.

As shown in Table 2, the main aims of the study are to identify different factors which influence IC practices in paediatric wards in England and Thailand, and to compare any factors identified in both countries in order to make recommendations for best practice. This is best addressed through a qualitative approach.

This chapter sets out methodological options and then focuses on the methodological approach employed in this study. It also discusses ethical issues that were addressed. The chapter begins by identifying the development of the research question, and then considers quantitative and qualitative approaches. The chapter then goes on to undertake a more detailed discussion of approaches before deciding to use ethnography. Ethnography was adopted to achieve deep insight into participants' experiences when they utilize nursing interventions in children in different countries. Finally, this chapter provides a critical appraisal of methods of data collection employed as part of the triangulation method, including participant observation and interviewing. The end of the chapter details the methods used to record and analyze the data.

3.2 Development of research question

It has been argued that there is the potential to overlook the values implicit in selecting a research question as a legitimate field of study, which is problematic (Weber 1949). However, Becker has forcibly argued that a researcher's decision to impose one question on the world rather than another is political, and value laden (Becker 1967). Within the healthcare context, the variety of factors to be considered when forming the research question, which will then guide the research endeavour, is itself value laden (Scruton 2004).

To develop the research question, the researcher began from the area of interest first, and then started to review the related literature before making a decision. Healthcare Associated Infections (HCAIs) were derived from the researcher's interest in focusing on paediatric patients. There are various reasons why the focus was in the area of paediatrics. The first reason is the researcher's experience, which mainly relates to paediatric patients, in both academic and practice areas. Second, there are no specific protocols regarding IC in children, as highlighted in the literature review. Therefore, IC protocols devised for adult patients are also used for paediatric patients. However, paediatric patients differ from adult patients physically and emotionally, and regarding their perceptions, and their immune systems. As illustrated in the literature review, there are limited articles regarding HCAIs in children, and most of these focus on intensive care units. Thus, these reasons motivated me to explore HCAIs in paediatric patients, beginning with factors which contribute to HCAIs in paediatric patients.

Sharkey and Larson (2005) identified that ethnography starts with broadly defined research questions that are likely to change as I progress, responding to the encounters and experiences in the field. The original research question was, therefore, broadly focused. Finally, on embarking on this study the main question to be addressed in this thesis is: are there different factors which influence IC practices in paediatric wards in England and Thailand?

3.3 Choosing an inquiry paradigm

There are several ways of seeking knowledge about the factors influencing IC in children from participants' experiences. The two dominant paradigms that are recognised as forming the philosophical foundation of modern research are positivism (otherwise referred to as quantitative, scientific or objectivism) and post-positivism (otherwise referred to as qualitative, interpretive or social constructivism).

Notably, it is important that both approaches include theories and methods based on different goals and underlying assumptions. Each paradigm has its strengths and weaknesses, and these have been discussed in many studies (Hunt 1991; Belk 1995). Quantitative research paradigms (based upon positivist principles) look for distinguishing characteristics, elemental properties and empirical boundaries (Horna 1994) and tend to measure "how much" and "how often". Conversely, qualitative research paradigms (based upon post-positivist principles) focus on the primacy of subjective consciousness and propagate the study of direct experience in which behaviour is perceived to be determined by the phenomena of experience. Qualitative research methods are associated with interpretative approaches and allow for issues to be explored in greater depth than quantitative approaches.

In order to choose the method which is appropriate for this study, quantitative and qualitative approaches are reviewed in the next section.

3.3.1 Quantitative research

Quantitative or positivist research is a theory of knowledge and philosophy of science which holds that the only factual knowledge is that which is based on sense, experience and positive confirmation (Louis 2007). The term "positivist" was first referred to by August Comte, a French social philosopher (Kolakowski 1993). This term is used to describe a set of assessment criteria about human

knowledge based upon observable phenomena (Kolakowski 1993). Positivism is a concept of the use of methods of natural science to study social reality, which is interested in testing theories and generating a scientific knowledge (Bryman 2004), such as the study of behavior patterns caused by non-compliance IC guideline. It also places emphasis on the value of numeric measurement and can be applied to a variety of subject matter (Wright 1993). Quantitative researchers believe in empiricism, involving the systematic scientific investigation of quantitative data including properties, phenomena and relationships (Silverman 1998). Thus, positivism links closely with quantitative methodology.

The aim of quantitative research is to study the natural science. It is widely used in social science research including healthcare research, which is valuable as clinical practice decisions are based upon the examination and evaluation of evidence. Quantitative research can be separated into two main groups; descriptive design and experimental design. Two distinctive strategies of quantitative study are experiments and surveys. A survey is a type of empirical descriptive research used in large scale studies to achieve wide coverage of the overall picture (Denscombe 2003). Meanwhile, the experimental strategy is well suited to examining hypotheses because this strategy requires the total manipulation of circumstances such as laboratory findings.

Currently, quantitative research is widely used in social science, and can be used to the study of human subjects (Parahoo 1997). It is suggested that positivism is inappropriate to study the depth detail of human being, including attitudes, beliefs, free will, and emotions (Hughes and Sharrock 1997; Bryman 2004). There is also recognition that positivist research cannot capture the human experience in a holistic manner because empirical observations only skim the surface of human behavior (Parahoo 1997).

Despite the fact that quantitative research is adopted in many healthcare studies, it is apparent that its deductive approach would clearly have limitations

in addressing this research question. According to Grossnickle and Raskin (2001), there are some limitations to quantitative research, such as limitations in exploring data in depth, responses to innovative concepts, and accessibility and potentially misleading data. With its roots in positivism, this approach is regularly associated with identifying causal factors, producing social outcome. Adopting such an approach would have entailed narrowing the basis of the research. However, the outcome of the study is drawn from quantification rather than words in the collection and analysis of data.

3.3.2 Qualitative research

Qualitative or post-positivism research is also known as anti positivism, subjectivism or interpretivism (Rolfe 1994). While scientists believe in empiricism and develop specific procedures to ensure that observations are verifiable, accurate and reliable, in everyday life, people cannot carefully verify what they have seen as scientists can. However, the philosophy of qualitative study is the discovery of people's feelings, opinions and experiences from their perceptions in order to achieve an understanding at the individual or group level (Bennett 2009). Vishnevsky and Beanlands (2004) and Hirakata (2009) uphold that the qualitative method, with its focus on exploration of individual experiences from a holistic, detailed perspective, provides a valuable device for generating and testing new hypotheses. A development of interpretivist philosophy is clinical realism, which attempts to address the vexed question of what constitutes a true account when we see one by proposing that there is a reality independent of people's thought. Furthermore, this can be studied by the researcher (Trochim 2006).

Some might argue that quantitative methods are also realist. However, as discussed in 3.1.1, the use of methods of natural science in quantitative research can also study social reality, the difference being that the qualitative-critical realist perceives that all observation is imperfect and has oversight, and

in addition, all theory is revisable. This is in contrast with a subjectivist, who tends to believe that there is no external reality (Trochim 2006).

In other words, quantitative methods reveal that objectivity is a characteristic that resides in the scientist, whereby scientists are responsible for preventing influences from their biases and beliefs and for seeing the world as it is. On the other hand post-positivists believe that any individual can see the world as it truly is. Trochim (2006) argued that the post-positivist believes that all observations are theory-laden, and that the researcher is inherently biased by their cultures, experiences, perceptions and so on. However, the post-positivist emphasizes the importance of multiple measures and observations to minimize this problem.

As described in section 3.3.1 regarding the limitations of quantitative study, qualitative research has become an increasingly valuable mode of inquiry for the social sciences and for applied fields such as social work, medicine, nursing, education and community development in the natural setting (Marshall and Rossman 2006). Qualitative research examines details in greater depth than quantitative research. The strength of qualitative study is its subjective nature. The subjective approach of qualitative research is necessary to provide certain insights into complex human experiences (Polit and Hungler 1999). Qualitative research also attempts to examine the pattern of meaning obtained from participants, and it is occasionally presented in participants' own words. Becoming part of the process of the study gives insight and provides rich information (Hammersley and Atkinson 1983).

Within the current research questions and the aims, it was necessary to study factors influencing infection control practice in paediatric wards. This meant exploring factors which included culture and attitudes. HIRAKATA (2009) described qualitative methods, which focus on an exploration of individual experiences from a holistic, detailed perspective, including those of the individual. In addition, it was not necessary to test a hypothesis, exploring as it

did the issues and concerns around the practice of IC in both Thailand and England, including the individual perspective or hidden view behind the IC practice in paediatric wards. Quantitative research cannot capture the human experience in a holistic manner (Parahoo 1997), therefore, a qualitative approach has been chosen.

A decision was made to adopt a qualitative approach based upon the principles of the subjectivist tradition. In doing this, a qualitative approach was deemed appropriate to understand beliefs, attitudes, behaviours, and construction of where IC practice takes place, and influences upon IC practices in paediatric patients. The intention was not to create a new theory or test a hypothesis but to take elements from paradigms within the subjectivist tradition to address the aims of this study.

In order to explore the subjectivist inquiry paradigms, for this study, a number of methods, are reviewed and considered in the next section. This is followed by a justification of the research method deemed most appropriate for the current study.

3.4 Choosing the Methodology

There are various qualitative approaches, which have superficial similarities, including phenomenology, ethnography and grounded theory. In order to choose which methodology is suitable for this study, these qualitative methodologies were reviewed, examining their respective advantages and disadvantages.

3.4.1 Phenomenology

Phenomenology is first and foremost a philosophy originating from the Greek. The word “phenomenon” means “appearance”, and “logos”, means “reason” (Heidegger, 1962; Holloway and Wheeler 2010). Cohen (1994) described

phenomenology as ‘the study of phenomena, the appearance of things’. It is an approach to thinking about what the life experiences of people truly are (Holloway and Wheeler 2010). This is because phenomenology is an approach that provides investigating and describing the phenomenon in its precise meaning for individuals who experience it by using their own terms. Moreover, phenomenology allows the exploration of human experiences through contact with people in their natural surroundings; this might help to achieve rich descriptive data that generates an understanding of their experiences and attitudes as a result (Barnett 2005; Benner and Ketefian 2008).

Two main phenomenological approaches are used in qualitative research, descriptive phenomenology and interpretive or hermeneutic phenomenology. These are sometimes recognised as Husserlian and Heideggerian phenomenologies in respect of the two philosophers, Edmund Husserl and Martin Heidegger, who originated these approaches. These approaches have similar aims and their data gathering and analytic procedures overlap (Holloway and Wheeler 2010).

The following sections begin by discussing different aspects of Husserl’s and Heidegger’s philosophies, and then move onto the strengths and weaknesses of both approaches before concluding with a discussion as to why phenomenology has not been used in this study.

3.4.1.1 Descriptive phenomenology

Descriptive phenomenology was developed by Edmund Husserl (1859-1938). Husserl helped to articulate the differences between natural science and human science (Giorgi 2008). Descriptive phenomenology is considered as an empirical qualitative research approach, and is also recognised as the terms ‘life-world’ and ‘essences’ (Holloway 2005). ‘Life-world’ is used to indicate the flow of experiences occurring, which provides what appears previously before categorized into ‘packages’. Moreover, the term ‘intuition’ was used by Husserl in preference to terms like ‘sense’, ‘think’ and ‘feel’ to indicate the presence or

appearance of the phenomenon that is then open to faithful description (Holloway 2005). By sampling in this way Husserl was able to reflect on the nature of what occurred. 'Essences' is used to indicate something different. It refers to invariant structures that can be intuited within an experienced world.

The central features of descriptive phenomenological research approaches are characterized by the following components (Giorgi 2008):

- 1) The researcher gathers detailed concrete descriptions of specific experiences from participants. Concrete experiences are usually obtained by interviews, by written explanations or even by drawing.
- 2) The researcher adopts the attitude of phenomenological reduction in order to intuit the intelligibility of what is obtained from participants' experiences.
- 3) The researcher seeks the most constant meanings for the context. This may be aided by various strategies.

3.4.1.2 Hermeneutic phenomenology

Hermeneutic phenomenology or interpretive is developed from Husserlian by Martin Heidegger (1889-1976) (Holloway 2005). Hermeneutic phenomenology is commonly known as the science of interpretation whereby language, in its written or spoken form, is scrutinized to expose meaning in phenomena (Holloway 2005). In other words, hermeneutic phenomenology attempts to clarify meaning and offer plausible explanations for human experiences. This is the way that the researcher endeavours to develop notions, behaviours, and actions, while making sense of the world through understanding and the clarification of speech and language.

There are slightly different ideas between Husserl and Heidegger. While Husserl emphasized that we as 'subjects' know 'objects' through a state of pure

consciousness, Heidegger argued that we always already know what is going on in this world and that our experience or our “knowing” is ‘prior’ to examining knowing (Holloway 2005). These make distinctions between descriptive phenomenology and interpretive phenomenology as follows (Holloway 2005).

Firstly, both descriptivist and interpretivist approaches are concerned with meaning. However, the interpretivist is concerned with the clarification of meaning in terms of plausible hypotheses, while the descriptivist defines how meanings are presented to consciousness, precisely as they are presented.

Secondly, the descriptivist suggests that the researcher is the expert in judging the validity of a subject through reduction using imaginative variation, while the interpretivist recommends the use of external judges to test the validity of findings.

Thirdly, the descriptivist suggests that all interpretation can be described and that if data are coherent, the coherent data can be explained while the interpretivist recommends that data can only be interpreted because humans are self-interpretive.

Hans George Gadamer (1900-2002) was deeply influenced by the works of both Husserl and Heidegger, and developed Heidegger’s model into Gadamerian hermeneutics, which have recently been widely adopted in healthcare. In other words, Gadamerian hermeneutics are integrated between the Husserl and Heidegger models and is now widely used in healthcare research.

In conclusion, it could be described that Husserlian’s descriptive phenomenology is based upon the intuition that when someone is exposed to phenomena such as relationships there is an intrinsic intelligibility to what appears, and that this intelligibility can be expressed as language, and can be described in creative ways (Holloway 2005). Experience is a strong valid focus

for exploration in its own right, without reducing it to biology, behaviour, or sociology. Alternatively, hermeneutic phenomenology represents the 'life-world' by examining language in its cultural context, the way language is given meaning, and its interpretation.

However, both descriptive and interpretative phenomenologies are adopted to explore the 'life-world' via others' experiences, but they utilize different methods to obtain information and presentation of the 'life-world'. Other qualitative approaches, for example ethnography, concentrate on cultural knowledge and circumstances, which probably affect participants' daily routines. This ethnographic approach is discussed in more detail in section 3.4.3.

Although the phenomenological approach can raise standards of good practice throughout participants' experiences, there are certain limitations of phenomenology. For example, the limitation of descriptive phenomenology is adhered by its concern to understand participant's experiences on their own terms while Hermeneutic phenomenologist considers how meaning is disclosed through 'ordinary language'. The difference between Hermeneutic phenomenology and ethnography is that ethnography concentrates on cultural knowledge and how to present that knowledge to participant's experience of artifact and cultural understanding (Bryman 2004).

This study explores a group of nurses working within different cultural settings. Therefore, the researcher chose to use the ethnographic approach rather than the phenomenological approach. Phenomenology was rejected for two reasons. First, although the phenomenological approach can raise standards of good practice throughout participants' experiences, there are certain limitations of phenomenology. For example, descriptive phenomenology is limited by its concern to understand participant's experiences on their own terms which may not be generalisable or transferable. On the other hand Hermeneutic phenomenology considers how meaning is disclosed through 'ordinary language' narrowing the field of inquiry to participant's perspective. It was felt, in

this research study at least, to be important to understand what was happening in the clinical setting within cultural context rather than to only obtain participants' experiences from interviews.

In addition a cautious approach was deemed necessary towards interpreting data from the UK context, which was not biased by performed opinions, values and beliefs. The very fact of not having worked as a nurse in the UK could have served to underpin a view of IC practice in paediatric wards, which was not underpinned by experience. This in itself can act as a 'hidden' bias, as views of nursing practice in cultures other than one's own can be influenced by a variety of sources, including literature, sharing experiences with colleagues who may have direct experience of the practice, reporting in the media and other sources.

3.4.2 Grounded theory

Grounded theory was developed by two sociologists, Glaser and Strauss, in the 1960s (Holloway 2005). Grounded theory can be identified in simple terms as how the theory is systematically generated from data obtained from participants (Denscombe 2003). Grounded theory is employed to generate theories grounded in reality from inclusive explanations of phenomena (Glaser and Strauss 1967), and it is, therefore, a creative process that is appropriate to use when there is a lack of knowledge or theory on a topic (Schreiber and Stern 2001).

The assumptions on which grounded theory is based are rooted in symbolic interactionism. Symbolic interactionism means behaviours of the individual, which are determined by how they interpret and give meaning to symbols. The meaning of symbols, such as language and actions, is shared by individuals within a given culture and is learnt through a process of socialization. Grounded theory makes explicit the reality of how individuals perceive their world and the way they interact with others (Holloway 2005).

Most importantly, grounded theory is useful for relevant predictions, explanations, interpretations and applications. In addition, there are three key elements of grounded theory –concepts, categories and propositions (Corbin and Strauss 2008). Concepts are not the actual data, but they are the conceptualizations of data, and categories are similarities and differences between concepts in order to produce lower level concepts. In other words, categories are the foundation of developing theory. The last elements of grounded theory are the propositions, which illustrate relationships that are generalized between a category and its concepts and between separate categories (Glaser and Straus 1967). By collecting and analyzing data, the researcher needs to be sensitive to relevant material; this is called “theoretical sensitivity”. The grounded theory process is complete when no new ideas emerge from the data. This point is called “theoretical saturation”.

This approach is now very popular in healthcare research to change or enhance healthcare knowledge and practice, which is beneficial for patients. However, grounded theory has strengths and weakness, which are discussed in the following section.

The strengths of grounded theory

Firstly, the strengths of grounded theory include the fact that the theory provides systematic justification and has become recognised as the logic behind qualitative research in order to generate theory from data. Generating a theory from data means that most hypotheses and concepts not only come from data, but are also systemically worked out in relation to the data (Strauss and Corbin 1998). Hence, the notion of grounded theory has currency in the research community, particularly in non-laboratory or social and healthcare research (Denscombe 2003).

Secondly, because grounded theory is based on data, the approaches are very adaptable. In other words, the methods to obtain data fluctuate depending on the influence of social research, which is different from quantitative research,

such as experimental research. In addition, the approach allows a great variability in the selection of data, for instance, both the sample and the analysis of data. Hence, there are various ways to collect data including observation, interviews, questionnaires and document analysis, which are commonly used in quantitative research, and in-depth interview, which is commonly used in qualitative research. This can be called the triangulation method.

Thirdly, because grounded theory is concerned with interpersonal relations and focuses on practice, it is widely employed in social and healthcare research and human interaction research. For example, grounded theory also identifies a series of events and how those events change over time, which is applicable to patients who have to live with a medical condition that may change over time.

Another advantage of grounded theory is its usefulness in developing theoretical propositions from data, but this method is totally different from quantitative research, which utilizes theory to produce new knowledge by testing the hypothesis. In contrast, grounded theory generates knowledge or new theory on the basis of data.

Moreover, Denscombe (2003) argued that grounded theory is close to reality because the notion of grounded theory is based on data and evidence such as practice and social situations. It is linked closely with the empirical situation, which can be produced from substantive theory modeled on the data as a result.

The weaknesses of grounded theory

Although grounded theory is popular, it has several weaknesses. Firstly, data are collected from various subjective points, and are small-scale, so it might be argued that the use of theoretical sampling is not able to employ in advance. Most grounded theory has used purposive sampling rather than theoretical sampling. In addition, the need to perform theoretical saturation makes it

impossible to state at the outset the eventual size of the sample. These are the reasons why Denscombe (2003) stated that the approach does not lend itself to precise planning.

Secondly, as data are collected within a particular setting, and some data obtained are notably associated with the influence of social, economic and political issues, they might be ignored from society. Moreover, because of the theory generated from the data, there is a tendency to separate the explanation of the situation by focusing the research on specific types of behaviour.

Thirdly, an open-minded approach to the data is something that can operate on a variety of levels, and researchers are inevitably influenced by their own culture or personal experiences. Regarding this issue, it is extremely detrimental to the outcomes if the researcher uses their own previous experiences rather than the norm. Dyson and Brown (2006) stated that “the imposition problem relates to the way in which a researcher’s values, frameworks and commitments insinuate themselves into the analysis and presentation of the data”. Consequently, the study might be contaminated as a result.

Fourthly, regarding data analysis, Strauss and Corbin (1998) developed a systemic process of analyzing data that was complicated and difficult to understand. In addition, qualitative methods use codes to categorize data rather than to quantify it. Strauss and Corbin (1998) suggested that there are three approaches to the analysis of qualitative data. They included explicit coding of all data and analytic processes, inspecting data and redesigning a developing theory, and combinations of both approaches in a manner that differs from the constant comparative method.

Moreover, interpretivists would be unhappy with any recommendation that essential theories provide one correct explanation of things. However, if the

theory emerges from data and is meaningful to the respondents, it will be a valid theory that is not open to alternative interpretation.

Finally, because researchers contribute their own experiences to the study, the approach can be criticized as being empiricist by looking to practical data as the source of its theories. In other words, it can be called empirical data because it is derived from the experiences of the respondents. Clearly, there are limited uses of grounded theory due to its hardheaded exclusion of other kinds of theory and alternative strategies designed to generate theory from data (Layder 1998). Denscombe(2003) upholds that grounded theory fails to acknowledge the value of insights obtained from general theories and forfeits any understanding of phenomena that do not originate directly from the immediate data.

In summary, there are superficial similarities in the aim of describing what happens in the clinical setting between Grounded theory and Ethnography. However, Grounded theory was rejected based upon two reasons. First, the aims of this study were to explore factors which contribute to healthcare associated infections in paediatric patients. This involved endeavoring to understand experiences, attitudes, beliefs, and what has been done in paediatric patients rather than providing an explanatory framework or generating new practices or theories. There is no need to generate theories or models to explain the phenomenon under investigation. There is, however, a need to understand the meaning of nurses' experiences, attitudes, and beliefs as explanations of behaviour. Second, this study tends to explore factors influencing infection control practice within different cultural context, namely Thailand and England. Therefore, ethnography was deemed a more appropriate approach than Grounded theory.

3.4.3 Ethnography

Ethnography is small-scale research, which originated from the fields of anthropology and sociology, derived from the Greek in the 1970s (Crang and Cook 2007). Ethnography is a methodology commonly used in descriptive studies to acquire more knowledge of cultures and people within those cultures. Famous ethnographers, such as Margaret Mead, lived among tribes of people. Brewer (2000) defines ethnography as the study of people in naturally occurring settings by means of the method which expresses their social meanings and routine activities. This study involves the researcher participating in the setting in order to collect data in a systemic manner but without meaning being enforced on data.

The goal of ethnography is to achieve a rich and detailed understanding of the ethics, beliefs, constructions and meanings of everything related with that group. The researcher needs to interact with the participants and participates in their social settings during the study period (Ploeg 1999; Crowley 2007). This means that the researcher has to develop a way of being within the setting, incorporating and questioning themselves and others and reflecting at every stage, including the impact their presence has upon the research (Manias 2001). Crang and Cook (2007) stated that ethnography is adopted in order to understand parts of the world, more or less, as the researcher experiences and understands the daily lives of the participants who 'live them out'. In other words, ethnography provides an inside perspective on daily life through the researcher's involvement with people, and explores human experiences and social interactions as well as the meanings that people apply to their experiences, that is, 'their symbolic world' (Sharkey and Larson 2005).

In terms of inside and outside perspectives, a number of different opinions exist in ethnography regarding the 'emic-etic' or 'insider-outsider' distinctions. Pike (1967) described 'emic' and 'etic' as two perspectives which can be employed in the study of social culture. The emic perspective is the insider or the native

perspective of reality. The etic perspective is the external, social scientific, perspective on reality (Fetterman 1998). A good ethnographer requires both emic and etic perspectives. Geertz (1983) proposed a different stance, suggesting that an ethnographic description will be a balance of the etic and emic perspectives. Therefore, the resulting interpretation is neither confined in the mental horizons of the natives nor a scientific analysis written by a scientist. He suggests 'tacking' between etic and emic perspectives by taking the native's concept and explaining it by using the outsider's theoretical comprehension.

The strengths of ethnography

The approach of ethnographic research incorporates a variety of techniques and a blending of strategies to capture this information (Roper and Shapira 2000). Notably, ethnography therefore emphasises the importance of the researcher's immersion in the data through fieldwork and observation. Moreover, the ethnographer accesses the field with an open mind regarding the society or culture they are studying (Fetterman 1998) throughout the literature and field work.

Roper and Shapira (2000) described ethnography as having both a process and a product. Fieldwork is the heart of ethnographic approach, and it is impossible not to have preconceived ideas before entering into the fieldwork. Thus, this approach allows the investigator to experience events with group members while maintaining a professional distance. This is necessary in order to balance 'emic and etic' while conducting research.

Moreover, this approach combines both the insider's perspective and outsider's analysis together, allowing deep insights about behaviours and beliefs of individuals as they navigate their social world. This might be obtained from a rich understanding of the actions, beliefs, constructions and meanings associated with the group who are being studied, known as 'thick description' (Harper and Fontaine 2009). In addition, the researcher then interprets the data resulting from the participants' own viewpoints. The results of this interpretation

are expressed through participants' own words, using local language and terminology to illustrate the phenomena (Hancock et al 2007; Sharkey and Larson 2005).

The weaknesses of ethnography

Ethnography involves three possible data collection strategies; participant observation, formal and informal interviews, and documentary analysis (Roper and Shapira 2000; Fetterman 1998). However, the most commonly used data collection methods are participant observation and in-depth interviews. As described above, ethnography is mostly undertaken in particular settings which might involve vulnerable people, especially in healthcare settings where patients are admitted.

Roper and Shapira (2000) argued that access to some groups in ethnographic study is difficult because of difficulties with access, or perhaps the population is hidden, or vulnerable and require additional ethical approval. Moreover, the researcher needs to know the overall background of the group before entering the field. The researcher might be confronted with a 'culture shock' or feeling of disorientation (Brink and Saunder 1976) if the ethnographer does not study the particular place, event and culture of the field. A gatekeeper is a useful person for the ethnographer to approach in order to gain access to participants, particularly in closed settings such as hospitals. Using a gatekeeper can minimize the possibility of culture shock and can promote trust from others during the fieldwork.

In addition, the researcher may need to spend a long time in the field until he or she obtains sufficient data, which is often time-consuming. The results of ethnographic inquiries can only be achieved from a lengthy period of intensive study and by living in the participants' social setting. Investigators must observe and participate in at least some of the activities that occur in that setting. Most importantly, investigators depend heavily on working extensively with a few participants. This can affect the cost of undertaking such research.

Some critics argued that ethnography is subjective and relies on interpretation and, as such, the results may not be reliable (Bryman 2004). Moreover, the use of small sample sizes or groups of people means that findings cannot be considered generalizable.

According to the aim of this study and the aims of the ethnographic approach, I decided to employ ethnography based upon the reasons described in the following section.

3.4.4 Why ethnography has been chosen

Three approaches, grounded theory, ethnography and phenomenology, were considered as potentially relevant to this study. As discussed previously, their superficial similarity in their purpose of describing what happens in any given situation posed a challenge to the researcher in making a choice between these methodologies, as each one promised to offer a relevant means of exploring the experiences of nurses regarding IC. After scrutinizing all three approaches, ethnography was chosen for this study based upon three main reasons, as follows:

Firstly, the ethnographic approach has the capacity to produce appreciative in-depth data which can provide deep insights into personal perspectives and the meanings of relevant issues, including place and group within society, which would be difficult to obtain through other approaches. In other words, ethnography is a description of patterns of behaviour of individuals and groups of people within a particular culture in everyday life (Bernard 1994). This relates to the aim of this study, which is to explore the factors which influence IC practices in paediatric wards. Thus, all factors which contribute to IC practices, including daily practices, culture of nursing, values, beliefs, attitudes, relationships and infrastructure of healthcare settings were investigated.

Secondly, the fundamental methods utilized in ethnography are observation, interviewing and content or document analysis, which are powerful tools in

obtaining deep and fruitful outcomes from data. In other words, the researcher participates, overtly or covertly, in participants' daily lives for a period of time, watching what happens, listening to what they say and asking questions. This can lead to the acquisition of rich data in the study. In addition, ethnography is an unstructured approach, and is therefore a flexible method. For example, while conducting research, the researcher needs to examine and make decisions throughout data collection regarding what, where, and when data will be collected. This method is very flexible and can enrich data, and also minimize the weakness of ethnography regarding reliability and generalizability of the results.

Thirdly, in terms of my experience, nurses are both observers and participants in the healthcare environment as they interact with patients and families in coping with illness. Observation is an integral part of the nursing process in order to investigate patients' problems and formulate nursing assessments before implementation. Thus, I am familiar with the observation method in the clinical setting, and realize that it is not difficult to employ this method in my research. Field (1989) identified four similarities between investigators who conduct ethnographic research and nurses in clinical practice. Firstly, nurses are good at approaching people in a variety of circumstances; similarly, ethnographers must also deal with multiple participants in order to obtain valid and reliable data. Secondly, nurses are careful listeners who are attentive to both verbal and nonverbal communication. Likewise, being a good listener is one of the crucial characteristics of ethnographers. Thirdly, nurses observe and interpret patients' problems on several levels simultaneously, and ethnographers do the same to investigate and interpret data obtained from participants. Finally, nurses and researchers have similar roles in that they continually observe and assess patients.

These four reasons support the use of ethnography for this study. However, ethnography has some weaknesses, as described previously. Therefore, I

intend to minimize those weaknesses by using triangulation which was described in detail in section 3.7.

3.5 Shaping the ethnographic approach

Ethnography has recently become widely used in healthcare research. In healthcare settings, particularly when the ethnographer is a practitioner, it is important to be aware that informants or participants could be supported by the researcher for therapeutic reasons and it may be difficult and unethical to separate out role between ethnographer and a practitioner. Thus, in the next section, the researcher will focus on ethnography in healthcare and nursing research.

3.5.1 The history of ethnography

Ethnography began in the twentieth century by two entirely independent research teams, one British, the other North American. The first was integrated with the classical tradition of social anthropology in Britain while the second development was the work of sociologists in the Chicago School (Bryman 2001). Both tended to explore the social world by close immersion and observation within the social setting. While social anthropology called this approach 'ethnography', sociologists called it 'participant observation' or 'field research'.

There are some differences between the two theoretical developments, however most are similar. Social anthropology assumes that ethnographers play an initial research role as outsiders whilst sociologists adopt an initial research role as insiders. This implies that social anthropologists prefer to study their own cultures from the eyes of outsider while sociologists explore their own community and establish a different perspective on what is familiar (Holloway and Wheeler 2010). However, ethnography has since developed into other social sciences such as education, health studies and social work, and the different uses of ethnography between social anthropology and sociology have

broadened. This is despite the fact that social anthropology now parallels sociology in a focus on urban and industrialized settings (Bryman 2001).

However, this tradition has disappeared, and only one particular legacy for ethnography that follows it today is the common-sense notion that it merely offers descriptions of things foreign, unusual and peculiar. In sociology, this just adds to the distortions regarding the discipline within common-sense knowledge (Bryman 2001).

3.5.2 Root of ethnography

Ethnography focuses on members of a culture, phenomena and related things in the context of culture and subcultures. This emphasis makes ethnography different from other qualitative approaches. Cultures include rules, norms, values, religion, communication, and everyday life. Individuals within the culture or subculture hold values and attitudes acquired through learning from each other. Ethnographers seek to explain the pattern of beliefs and behaviour and specific processes within the subculture or culture they study. Moreover, the relationships between individuals and the group are also explored.

There are various main features of ethnography as briefly described in section 3.4.3. These include data collection through observation and interviews, the use of 'thick' description, selection of key informants and settings, and emic-etic dimensions (Holloway and Wheeler 2010). These will be described in more detail later in the ethnography approach. Firstly, I will describe how to validate ethnographic investigation in the next section.

3.5.3 Variations in ethnography

There are several types of ethnography, some of which overlap. These include descriptive or conventional ethnography, critical ethnography and auto-ethnography (Holloway and Wheeler 2010).

Descriptive or conventional ethnography is most commonly employed in ethnographic studies. It focuses on the description of cultures and subcultures through analysis, reveal patterns, typologies and categories.

Critical ethnography is based on critical theory. This type of ethnography was first discussed by Thomas in 1993 (Holloway and Wheeler 2010), and involves the study of macro-social factors such as power and hidden reasons. Currently, this type of ethnography seems to be useful in healthcare research, particularly with regard to nurses and midwives because it is concerned with the empowerment of people.

Auto-ethnography focuses on the researcher's centre rather than exclusively on others. In other words, this approach focuses on the feelings and experiences of the researcher.

Moreover, there are more types of ethnography used within the ethnography context, such as micro-and macro ethnographies focusing on subcultures or settings such as single wards or special groups. Fetterman (1998) argued that micro-ethnography consists of research in small units or focuses on activities within small social settings. This type is sometimes called focused ethnography (Roper and Shapira, 2000). On the other hand, macro ethnographies focus on larger cultures. Micro ethnography is currently widely used in small-scale healthcare research.

3.5.4 Ethnography and healthcare and nursing research

Over the past century, research in nursing has been developed for various purposes, including integrating theory and nursing practice and developing practices, but it is interesting that there are few ethnographic studies within the nursing research literature. Where interpretative studies of nursing practice are undertaken, researchers have more often turned to grounded theory (Latimer 2003). Early 1960s ethnographies were more highly concerned with the issue of

professional socialization, or experiences of patients, or the relationship between healthcare workers (HCWs) and patients (Atkinson et al, 2001). The term 'medical anthropology' was first utilized by Scotch in 1963 to describe the discrete field of study and focus on the human response to health and illness embedded within a cultural system (Wellin 1978). This interest has since spread to nursing practice. Pioneering nursing anthropologists focus on ethnographic methods to discover how people from various cultures integrated health beliefs with the results of participants' practice. Most nursing ethnographies focus on a distinct problem within a specific context among small groups of participants. This type of ethnography is classified as focused ethnography, mini-ethnography, or micro ethnography (Roper and Shapira, 2000).

Currently, ethnographic research is widely applied across a broad range of nursing contexts. Because the practice of nursing is a complex, interactive process occurring within diverse contexts, the ethnographer has to follow the direction of practice and insight into the nursing contexts, the patients, and the interactions of practice (Wilson 1989). According to the nature of ethnography, ethnographic methods can provide participants' insights through participant observation and interviews in fieldwork to obtain participants' experiences, values, attitudes and cultures. Thus, it can be broadly applied to explore the meaning of nursing care, or cultures of nursing care, both from nurses and patients or relevant people within the fieldwork.

In order to explore everyday practices and cultures from a contextual perspective, nurses and other clinically oriented ethnographers usually conduct focused inquiries, which is called focused ethnography (Morse 1987), or micro-ethnography (Werner and Schoepfle 1987). However, in a study of nurses within a hospital unit, Germain (1979) listed seven dimensions that the ethnographer should be aware of to achieve subjective adequacy. These include amount of time, place or location, social circumstances, language, intimacy, consensus and prejudice management.

3.6 Design of the Study

The term 'research design' is used to describe how the research process links the research question with the data generated by the methodological approach adopted (Punch 1998). Research design, therefore, involves combining the essential elements of investigation into an effective problem solving sequence (Miles and Huberman 1994). There are five main types of research design including experimental, cross-sectional or survey, longitudinal, case study and comparative (Bryman 2008).

The design of this research project reflected the nature of the research question and was primarily aimed at ensuring the holistic understanding of practicing nurses' experiences in the paediatric setting, in different wards and different countries. Thus, a comparative study design was used within an ethnographic approach.

Comparative study design

A comparative study design entails using more or less identical methods of two contrasting cases. The comparative analysis may be realized in either quantitative or qualitative contexts (Bryman 2008). The key to the comparative design is the ability to identify the distinguishing characteristics of two or more things which act as a springboard for theoretical reflection about contrasting findings (Bryman 2008).

3.7 Research strategy

This study was based upon the principles of ethnography with emphasis on focused-ethnography, or micro-ethnography.

Participant observation and semi-structured interviews were adopted as the main data collection methods based upon phased approach in order to explore

participants' experiences within a small number of wards in Thailand and England. The use of multiple methods of data collection is known as 'triangulation'.

There are different types of triangulations, including data investigators, theories, and methodologies (Denzin 1989a). Investigator triangulation means that there is more than one researcher involved in the research. Theory triangulation means the use of different theories in the study. These various types of triangulation can be grouped into two main groups of triangulations; within methods and between methods. Within methods triangulation adopts different strategies, but keeps a single paradigm. Meanwhile, between method triangulations are used across paradigms, sometimes called mixed methods. This is mainly used in research in order to confirm the findings generated through one particular method by using another method (Bryman 2008).

The strengths of triangulation methods and data sources are not limited to merely facilitating a more informed exploration of commonalities between the data obtained from different sources and by different methods. It also allows the researcher to explore anomalies in the data in greater depth, and plays a central role in developing a more in-depth understanding of how power affects social relations within the setting. For instance, from observations of nurses it was apparent that they might do something differently, so interviewing could serve to obtain more in-depth data from nurses individually, and could also confirm to each other what they have done through questioning.

There are disagreements as to how to ensure that ethnography has generalizability, external validity and reliability when data are collected from a small number of participants or specific groups. This seems to be the fundamental issue debated between positivists and post-positivists. Thus, triangulations are used to minimise the weaknesses of each approach. Clark (1995) advises against using different methodologies because this produces a diffused picture due to a lack of consistency and adequacy in the analysis,

whilst Leininger (1992) purports that triangulation across methods violates the integrity of both methodologies, therefore researchers are advised to mix methods within a paradigm rather than across paradigms because they differ in philosophy, traits and aims, therefore this is what I am doing in this project.

In this study, participant observation and interview tools were generally adopted as the principle of ethnography. These were used within the sequence of triangulation in order to investigate nurses' behaviour, beliefs and IC practice in different cultures and infrastructures. Adopting an ethnographic approach meant that the researcher worked out from the data by watching what participants do, questioning what they do in order to generalize the situation to another from categories, and thus gradually generating and refining theoretical statements (Bryman 2008). The use of participant observation throughout the whole of the research process and the clarity of roles open to the researcher on the continuum between participant and observer (Gold 1969) also served to validate and confirm data obtained through the interviews. Data obtained through the level of immersion facilitated by using participant observation could be verified and validated through semi-structured interviews which will be described further in the validity and reliability section (section 3.11).

3.8 Choosing the research site

This section involves participant recruitment and sampling methods, purposive sampling and selection processes in order to obtain both research settings and participants in England and Thailand. Limitations and difficulties regarding sampling methods are presented.

Participants and sampling methods

Qualitative approaches demand different sampling techniques from those used in quantitative approaches, such as random selection and probabilistic sampling. In fact, sampling methods are rarely discussed in reports of a

qualitative nature, especially in focused ethnography. The aim of sampling in qualitative research is not only to sample populations; the researcher has to choose who to sample, what to sample and where to sample because they cannot investigate everything. Morse (1991a) advised that qualitative sampling is both appropriate and adequate, promoting the aims of the study and answering the research questions.

However, the sampling technique and an adequate sample size are essential in qualitative studies to present credible conclusions and enable the development of theories. This is apparently one of the weaknesses of the qualitative approach in terms of small scale sampling. Some experienced ethnographers use rigorous randomizing strategies, particularly when they already know a great deal regarding the culture or unit they are studying. This means they randomize from settings that are well known by the researcher. Fetterman (1998) suggested there are two approaches to this decision. First, choosing who and what not to study and, second, selecting who and what to study. According to the literature reviewed, most medical or focused ethnography usually applies purposive sampling and convenience sampling to select the research site. Convenience sampling or opportunistic sampling is self-explanatory, meaning that the researcher uses opportunities to ask participants who might be useful for the study and easy to access (Holloway and Wheeler 2010). In terms of particular groups of practice regarding paediatric patients, purposive sampling was adopted in this study because of costs of studying and time limitations. Further details of purposive sampling and the way the research sites were chosen are discussed in as following.

Purposive sampling

Generally, there are two major sampling methods; probability sampling and non-probability sampling. Patton (2002) stated that purposive, or criterion based, sampling is one type of non-probability sampling useful for gaining rich, in-depth information about a particular group, and is extremely useful for

qualitative research. Sample units, the selection of participants, and the setting of time are selected for a previously specified purpose. Variations of purposive sampling can be applied, such as snowball sampling, chain referring sampling, opportunistic sampling and theoretical sampling. Snowball sampling is when previous informants are asked to suggest other informants in particular areas, and total population sampling is when all participants selected come from a particular group (Morse 1991a).

However, Patton (2002) identified a number of different types of purposive sampling in the qualitative approach. These include: 1) homogeneous sampling, 2) heterogeneous sampling, 3) total population sampling, 4) chain referral sampling, 5) convenience or opportunistic sampling, and 6) theoretical sampling.

In terms of theoretical sampling, Glaser and Strauss (1967) stated that the researcher selects their sample on the basis of concepts and theoretical issues which arise during data collection. This means that the sample group cannot be planned beforehand and its size will be determined by data saturation.

In conclusion, this study intends to explore clinical nurses' experiences regarding IC in a particular group, paediatric patients. Thus, purposive sampling was adopted based upon snowball sampling and theoretical sampling a particular group of participants, paediatric nurses and reserve to allow for participant drop out during this study. Purposive sampling is used to target useful informants who have undergone experiences and will have in-depth information in the particular area that the researcher needs (Patton 2002). These will be explained in detail in the process of participant recruitment (Page 136). In addition, purposive sampling and theoretical sampling also were adopted to choose the research site described in the following section.

Theoretical sampling and the selection process

In selecting the research sites, a number of hospitals were considered. Within this process, theoretical sampling and convenience sampling were adopted to select the hospital in England and Thailand. Finally, children's hospitals in Leicester in England and Bangkok in Thailand were chosen for the following reasons.

The hospital in Leicester was chosen because it was convenient to the researcher, including easy to access and good public transport. Furthermore, this hospital provides the variety of wards that are comparable to the hospital in Thailand.

Meanwhile, clinical settings where the researcher worked could be much easier to access, and could save much more time in building up relationships between staff and the researcher. As Punch (1994) argued, the researcher's institutional background can have considerable influence in opening or closing doors. Indeed, the researcher's clinical background in this role may have opened the doors of physical access, but would not necessarily have opened the doors of social access into potential research sites; it may have closed some. This means that the researcher might obtain permission to access, but might not always gain trust and cooperation from individuals.

In considering whether to conduct the research in the site where I worked in Thailand, I was conscious that my occupation and professional background may well have hindered the meaningful engagement of my participants in the research process. This meant that investigation could have been interrupted during participant observation by participants or staff who used to be my students. In addition, if researchers select the site where she or he worked, the study might obtain only an insider perspective rather than an outsider perspective (Guba and Lincoln 1989). On these grounds I ruled out the option of conducting research where I worked and decided to locate my research in a

nearby area. Despite the fact that purposive sampling or convenience sampling allows the selection of any setting to conduct research, hospitals in comparative studies should be of similar types.

Therefore, In terms of a comparative study, both sites in England and Thailand should be similar. In order to validate the study, I attempted to choose the same level of hospitals and participants before the selection was made. Thus, I chose the children's hospital in England first, and then a number of similar hospitals in Thailand were considered as second and third choice. This was because there are some difficulties in relation to the ethical approval process, and limitations regarding access and time to conduct the fieldwork. For example, the ethical approval committee in Thailand works independently. If a researcher wants to conduct research at any of the hospitals, the researcher can submit an application to the ethical approval committee at the prospective hospital directly. Moreover, the processes of ethical approval are different between hospitals. Some hospitals take a short time but some take a long time. Because of the time constraints of studying for a PhD, I set up alternative choices in case any difficulties arose with the first choice.

After identifying a number of potential sites, at least three tertiary hospitals, which are similar, were selected in the first round. The researcher, co-researchers who are paediatric nurses, ethical approval committee and colleagues discussed these hospitals in relation to ethical approaches, length of time needed, convenience and more variety of practice. Then three paediatric wards from two tertiary hospitals were selected for the comparative study and richness of data, including surgical wards, medical wards and paediatric intensive care units. Both hospitals in England and Thailand are large city centre hospitals providing both secondary and tertiary care.

In doing this process, theoretical sampling was adopted in every stage of sampling because sometimes I could not predict what was going to happen; in addition, time and costs were saved by conducting the research near to the

university. Initially, I intended to study 10 nurses from the same ward, but this was changed after conducting the research in Thailand because the Thai ethical committee suggested that I added a greater variety of wards in order to validate the outcomes of this study.

Moreover, in terms of limitation of access, three wards in Thailand were selected to conduct the research from two different tertiary hospitals. This is because the first hospital for which I obtained ethical approval did not allow the research to be conducted in the neonatal intensive care (NICU). However, both hospitals are run by the Thai government, so most structures and policies, including IC, are similar. When the situation was changed, I had to consider the criterion of nursing practice and construction of the fieldwork to ensure that all three wards in Thailand would be the same in relation to England. The principle of nursing practice was the main criterion in choosing the clinical setting. Finally, six different wards from children's hospitals in Thailand and England were selected, three from Thailand and three from England. These wards provided surgical care, medical care and intensive care.

After collecting data from Thailand, the amendment from the Thai ethical approval committee was submitted to the ethical approval committee in England. This was because there were further suggestions from the Thai committee to add extra wards to increase the variety of data. Likewise, three paediatric wards with similar conditions in England were selected following discussions with the head of the children's hospital, the co-researcher, colleagues and the ethical approval committee. This is because all changes in the research should be approved by the ethical approval committee. The criteria for ethical consideration are described in the next section.

3.9 Ethical Considerations

In discussing the ethical issues and dilemmas which arose during the research process and the strategies adopted to address these issues, it is first necessary

to define what we mean by ethics and what we mean by ethical decisions in the context of the research process. Barnes (1979) defined ethical decisions in research as follows:

“Ethical decisions arise when the researcher tries to decide between one course of action and another not in terms of expediency or efficiency but by reference to standards of what is normally right or wrong (Barnes 1979, p16).”

Barnes clearly identified ethical decisions and ethical considerations as those relating to what is right or just rather than what is beneficial for the researcher. However, this raises questions about what is right or just, and what values these decisions are based upon. Indeed, in considering what is right and just for one group we must also acknowledge that this will probably not be considered right and just right for another group, or indeed for the same group in different circumstances or conditions. Perceptions of what is right and just may also be time- and location-specific, and as such may demand a flexible approach. It is important to note that what is right and just for a group may well relate to their positions in what Becker (1967) refers to as hierarchies of credibility, which affords differing levels of influence over the parameters of what is considered ethical and what is considered unethical.

In conducting this piece of ethnographic research, a range of methods were employed with paediatric nurses in different levels and positions. In other words, a range of professionals working in paediatric wards were also involved in this study within the wider context of hierarchies and experiences of their organisations operating in the hospital.

As can be seen in the work of ethnographers (Ferrell and Hamm 1998), ethical dilemmas and decisions become further complicated when studying in complex settings. This level of complexity was evident in the social background or surrounding, as practitioner nurses could be working with different levels of vulnerable patients. Doing research with children also required permission from parents or caregivers because children cannot make decisions on their own.

Despite the fact that this study merely watches nurses who look after paediatric patients, some settings required permission from parents. This raised complications when the researcher started doing the research in particular settings as a result.

In fact, various discussions of the ethical dilemmas, which until recently have only played a 'cameo' role in ethnographic methodological considerations, revolved around justifying the conduct of the researcher after the work had been completed rather than identifying a proactive ethical strategy prior to entering the field (Truman and Humphries 1994). Maguire (2000) argued that ethical dilemmas are an integral part of the process of doing good ethnographic research, and as such can provide useful data which assists in illuminating the complex nuances of the social setting. Thus, there appears to be a clear methodological benefit in critically exploring ethical issues, not merely to reflect the importance of the ethical behavior of the researcher, but also to provide a deeper understanding of the social setting being studied.

Moreover, ethical issues have to be considered in all research studies in order to protect participants from harm or risk, and follow professional and legal rules (UKCC 1996). Generally, nursing and midwifery ethics are concerned with guiding professionals to 'safeguard the importance and well-being of patients and clients' (UKCC 1996). Thus, the researcher benefits from a background which focuses on ethical and legal aspects of the profession.

Couchman and Dawson (1995) stated that the rights of the individual include protection from harm, to have informed consent, to participate voluntarily, and to be assured of confidentiality, anonymity, dignity and self-respect. These rights need to be ensured by the researchers. De Vaus (2001) argued that voluntary participation can threaten external validity as some people are more likely than others to decline to participate in studies, thus producing biased samples. In order to generate a sample which is most inclusive, the participants were encouraged to participate by appealing to their goodwill.

One of the most crucial issues to be considered in relation to ethical principles is the provision of anonymity and confidentiality. It is essential that the way the data is collected provides and guarantees confidentiality of respondents. De Vaus (2001) claimed that guaranteeing confidentiality is important for methodological and ethical reasons in that “if participants are confident that their responses are truly confidential (or even better if they are anonymous) we can expect that people are more likely to participate in the study and provide frank and honest answers”.

Thus, ethical concerns relevant to this study are informed consent, voluntary participation, confidentiality, anonymity and self-respect, and the next section describes the ethical concerns of this study and the ethical approval process before accessing the field.

3.9.1 Ethical consideration prior to entry

Because I planned to conduct the fieldwork in Thailand and England, this required ethical approval from the De Montfort University where I study, and clinical settings in both England and Thailand. It is unethical to observe and interview participants without permission. According to the requirements of National Ethical Approval worldwide, if the study belongs to a PhD student, it is also important that this approach is rigorous enough to withstand the scrutiny of the university ethics committee before submitting to the National Research Ethics Service (NRES) in England and the ethical approval committee in Thailand.

Indeed, the ethnographic approach adopted in this research did facilitate deep immersion in the clinical setting, in particular in the paediatric area. Immersion into the natural setting in the hospital presented a number of complex risks and ethical dilemmas which required careful consideration in order to ensure that strategies were in place to successfully negotiate them when entering the field.

Prior to entering the field, therefore, a number of ethical, moral and legal issues needed consideration (Wax 1983).

Mason (1996) argued that there are two ways in which ethical issues interfere with qualitative research. She describes these as the intimate engagement in people's lives and unexpected ethical issues being presented during the research process as a result of changing the direction of interest and access during a study. These concerns can be addressed by clarifying intentions before entering the field, whilst the researcher is formulating the research problem itself, advice which is echoed by Wax (1983) who urged researchers to be conscious of issues of power prior entry. For example, the researcher should carefully consider regarding ethical, moral and legal issues before access to the field.

According to ethical issues, I was required to clarify my project with the ethical approval committee both in England and Thailand before I commenced the fieldwork. These issues are described in further detail in the following section.

3.9.2 Ethical dimensions

Thornton (1997) referred to a convincing rationale for choice of conduct which suggests that the ethics of participant observation are best left relative to the sub-cultural situation under observation. This reflects an acknowledgement of how the culture of the group being studied can result in the researcher being presented with a wide range of diverse ethical issues throughout the study, which cannot be predicted and, as such, necessitates a flexible approach by the researcher in order to effectively deal with these. In this study, the main ethical issues concerning the NRES were permission from participants before conducting the research, which required a signature via the consent form, confidentiality of participants and data, and posters and leaflets for parents' information during the study. Moreover, the solutions to ethical dilemmas were clarified with the ethical committee throughout this process.

For example, although poor practice was apparent during observation, I did not intervene unless those practices led to severe harm for patients, but poor practice was reported to the paediatric unit at the end of study. However, if an observed practice was dangerous, life threatening or contravenes the professional code of conduct the researcher intervened immediately.

Data transcripts, tapes and consent forms were kept in a secure place in accordance with the NHS Research Governance Framework. Data transcripts were treated as confidential and anonymity was preserved by using codes instead of real names. Access to a personal computer used in this study was restricted to the researcher only and all identifying information was removed.

3.9.3 Informed consent and confidentiality

Informed consent and confidentiality is a fundamental principle of an ethical approach to the fieldwork. Obtaining the informed consent of those participating in the study was consolidated in the research design. This process will be described in further detail later, regarding gaining access. In this study, information sheets (see appendix 2) were sent to participants through the gatekeeper: a gatekeeper is a person who is able to grant access to the field. The respondents were provided with the description of how they were selected and how the data would be collected through observations and interviews. I realized that it was not sufficient for participants simply to read the participant information sheet (PIS) and then expect them to sign it. Therefore, I allowed participants to ask if they want to know additional information in order to ensure that they fully understood what the study entailed, thus, they were informed that their participation was voluntary, and that they were free to decline to answer any questions and leave the study at any time.

The observations took place in paediatric wards where children were present. There are some critics who would argue that adopting research in a children's setting could affect the children even when they are not directly involved.

Leaflets and research posters were, therefore, provided to parents and guardians to inform them about the research and that only consenting nursing staff were observed, and data on children were not collected.

Regarding confidentiality, I was committed to ensuring that 'identities', locations of individuals and places would not be included in the published results. All observations were treated confidentially during the study. Data were obtained and held in an anonymous format and all data were kept securely in a locked cabinet at the university. Any data kept in electronic form at were kept on a personal computer that required a secure password to access. Data collected and processed in this research study were handled in compliance with the Data Protection Act 1998.

I was also aware that confidentiality can mean different things to different people. Bond (1995) identified at least four different interpretations of confidentiality by his respondents. In order to establish an understanding of what was meant by confidentiality, I explained what I meant by confidentiality and asked participants to repeat this back to me, in their own words. In doing this, any life-threatening practices I observed would not remain confidential. In addition, poor practice would be reported to the unit. These often led to a short discussion of what we meant by these phrases, which enabled the researcher to ensure that participants clearly understood.

In conclusion, it is important to acknowledge that the explorative nature of the fieldwork sites and the research question itself were vulnerabilities which raised ethical issues, particularly in relation to the common damaging effects the research process could have to vulnerable patients and their setting (Silverman 2001). Thus, all situations in relation to observation, including other healthcare staff, were anonymous.

3.9.4 Child protection issues

Concerns regarding potential child protection issues became apparent early on in the research as the local children's hospital informed me that the Criminal Record Bureau (CRB) check and honorary contract are common requirements before working in the children's areas in term of safeguarding. It was also important to ensure that children or vulnerable adults would be safe with people who become involved in their lives.

The CRB is responsible for conducting criminal checks and background checks on individual employees or volunteers before working with children or vulnerable adults. There are two types of CRB check, standard disclosure and enhanced disclosure. The standard check includes police files and official reprimands, while the enhanced disclosure delves deeper into the individual's background. This is used primarily for employees or volunteers working in close proximity with children. In order to collect data in the children's unit, the enhanced disclosure was applied for in this study.

Regarding the honorary contract, I was granted this by the University Hospitals of Leicester on behalf of De Montfort University.

3.10 Preparing the fieldwork

This section is an in-depth critical appraisal of methods of data collection adopted in this study. The research practice has been separated into two phases. As described in section 3.5, the first phase focused on participant observation, and also included preparing to gain access and negotiating access. Then it will move to a critical appraisal of the participant observation, and this will be followed by a critical appraisal of the researcher's biography, reflexivity and recording observations in the setting. Then the study will move to the second phase, which comprised semi-structured interviews. These provided sample selection, practicalities of interview, participant observation, getting

participants to talk, participant interviewing, recording data, and managing and analyzing data.

3.10.1 Preparing knowledge and relevant education

According to Germain (1979) there are seven dimensions in clinical nursing research that investigators must explore to achieve an adequate data within ethnographic participant observation. First, the observer should spend time learning about participants' behavior and events and be accepted as a member of the subject group. Second, the researcher should study the background of the location beforehand. Third, the researcher should explore the social circumstances in order to capture a complete picture of the fieldwork. Fourth, if the researcher is studying different cultures using different languages, then the researcher should prepare him/herself before going into the field. Fifth, a good relationship is very useful for approaching participants in order to become involved in the clinical setting. Sixth, the consensus or validation of data and the interpretation of data is a crucial consideration. The researcher should check their interpretation of the data with participants in the study after finishing fieldwork data collection. Finally, the researcher must be aware of individual bias which may influence the data collected and interpretation of the findings.

Moreover, Germain (1979) recommends that it would be useful if researchers prepare themselves before entering the field by learning about background and culture. This can prevent unknown problems which could happen during the fieldwork. This issue made me realize that conducting research in different cultures is not easy. Even though I was familiar with the clinical setting because of my nursing background and experience, doing observations in different circumstances could result in many difficulties, including cultures and communication between HCWs and researcher.

Therefore, throughout this period I acquired knowledge of the English culture as well as discussing healthcare practices with English nurses and doctors.

Practicing semi-structured interviews was done before accessing the field. Moreover, negotiating with participants in the recruitment process not only led the researcher to gain more confidence in the English language and gain sufficient knowledge in observation practices in an English hospital, but it also built inter-personal trust between the researcher and participants.

Gathering information is of great importance before accessing the field. As discussed in the weaknesses of ethnographic study section, it can result in culture shock if the researcher does not consider this issue. Thus, information of healthcare services and healthcare settings was studied and reviewed before accessing the fieldwork. For example, standard IC guidelines which were used in both countries were reviewed, and it was very helpful to critique what was seen as normal and unusual during observing.

After spending a number of weeks preparing to access the field, I initially identified suitable wards to observe, beginning with the general wards, surgical and medical, and finally accessing the intensive care unit. It helped me to get used to the differing nursing roles and increasingly complex nursing procedures by starting with general wards before moving to more complicated wards.

3.10.2 Initiating access

Access is an important process for a number of reasons and requires careful methodological consideration. Burgess (1984) underlines the importance of gaining access because the success of access will result in both the ability to collect data and the reliability and validity of the data. This is because the activities of the researcher in this crucial phase will impact on the 'way in which those who are being researched define the research and the activities of the researcher' (Burgess 1988).

However, it is often not given full attention, and therefore an element of the research process can remain hidden if the researcher does not attend to this

issue. In considering issues regarding access and how they impacted on this piece of research, access is considered in some detail. It must be emphasized that, when considering access in an ethnographic study in the clinical setting, accessing 'abnormal' groups and subcultures in the open (Sotheland and Cressey 1970) has been widely documented as a difficult process (Hobbs 2001), which can be both time-consuming and potentially fruitless. Such difficulties can be related to this project in that participants work outside normal daytime hours. Apparently, these are difficulties inherent in accessing research participants, particularly clinical nurses working in rotation on different shifts. Moreover, there are a number of cultural differences between the researcher and the participants in England.

Apparently there were a number of potential barriers that could help the researcher to access the field, such as 'gatekeepers'. Owing to the hierarchy of consent in relation to access in the clinical setting, the head of the children's hospital, head of children's nursing and head of wards and ward sisters in hospitals in both Thailand and England were involved in this study as gatekeepers. Gatekeepers also helped the researcher to access certain wards which are closed settings, particularly intensive care units. This approach was also taken to ensure that the workers understood that the researcher appreciated that they had a key role to play as gatekeeper and had the power to grant access to the setting. Therefore, in order to gain trust from participants where the researcher was unfamiliar, I decided to negotiate through the gatekeepers both the hospital in England and Thailand.

In order to gain the trust of the gatekeepers, the researcher contacted the gatekeepers directly and explained the research project and what the researcher required them to do. The efficacy of the ethnographic approach and its beneficial outcomes to IC practice in children in the future were discussed between the researcher and the gatekeepers. Rapport between the researcher and gatekeepers was developed during this process. However, in England, I

required the CRB check, permission from the head of nursing, and an honorary contract on behalf of the university before I was granted permission for entry.

Moreover, details of my background and biography including education, experience and clinical research was required by the head of nursing. This requirement was developed through the period of entry to the fieldwork following discussion of the project with the head of nursing, and it helped the researcher gain trust from the head of nursing. This issue was also noted by Anderson (2002) when he identified how his past cultural experience undoubtedly helped him as he began to negotiate the research setting.

In ethnographic studies, method and biography often merge in a reflexive soup of experiential reflection and it is not uncommon for ethnographers to utilize their own biographies in order to gain and maintain access to deviant groups (Hobbs 2001:212).

There are a wide range of publications on participant observation, much of which is related to how the researcher presents her or himself (Burgess 1982). This clearly relates to the earlier process involving the importance of the personal biography of the researcher in the negotiating process in order to obtain permission to access the field. However, this also affects the researcher in relation to healthcare staffs' perceptions and, subsequently, on interactions in the ward. Regarding participant observations, Burgess (1984) argued that there are a number of factors, including experience, age, sex, and ethnicity, which could influence the participant's roles by the researcher and how they are perceived by the group participating in the research (Venkatesh 2002).

Thus, I submitted my biography to the director of nursing before accessing the clinical setting. After they agreed with this study, they negotiated with lower gatekeepers, such as ward sisters and ward managers, straight away. They also recommended participants whom they thought could be useful for this study as a snowballing technique, and this was very helpful for me, as I have a different background and different culture than people from England. Thus,

gatekeepers were extremely important to this study. As Mandel (2003) argues, if you obtain permission from someone who is 'senior' or important, you can assume that everyone else will know what you are doing and agree to your presence, and this seem to be the power of gatekeepers. However, it took a number of months to arrange an appointment and have discussions with gatekeepers because most of them work as part of an executive team at the hospital. Therefore, gatekeepers were extremely busy and needed an appointment before meeting up. This contributed to unprecedented time delays as a result.

There was a level of distrust from some of staff in the setting who was concerned that I may be a spy from an infection control team. These members of staff were reluctant to be involved. In order to gain their trust, my biography was sent to the gatekeepers and also passed on to the healthcare staff in the setting as well. Even though I did not gain a nursing qualification in England, a qualification in nursing was gained in Thailand. Therefore, this study was supported by nursing professions in both countries. In addition, as mentioned previously in the section on ethical issues, if there was anything wrong, such as very poor practice which has a severe impact on patients, the researcher would interrupt participants immediately. Thus, the researcher needed to inform participants of her professional background before commencing the observation.

Additional factors include class, race, gender and age, all of which can impact on the field relations. In this study, I would also argue that the use of English language and experience in IC systems can also impact on field relations, in particular clinical services. This is the reason I had to prepare myself adequately before accessing the fieldwork.

3.10.3 Participant recruitment: Paediatric nurses

The sampling technique and an adequate sample size are crucial in qualitative studies to present credible conclusions and allow the development of theories. Some experienced ethnographers use rigorous randomized strategies particularly when they already know a great deal regarding the culture or unit they are studying. Fetterman (1998) suggests there are two approaches to this decision. First, choose who and what not to study, and second, select who and what to study. Morse (1991a) advises that qualitative sampling is both appropriate and adequate. It means that the sampling will promote the aim of study and answer the research questions.

In this study, variations of purposive sampling, such as snowball sampling and theoretical sampling were used to recruit 10 paediatric nurses in England and 10 paediatric nurses in Thailand. Snowball sampling means previous informants will be asked to suggest other informants in particular areas and total population sampling is when all participants selected come from a particular group (Morse 1991a). A sample size of 20 is consistent with other qualitative studies involving interviews and observations. This should generate sufficient data to identify general themes.

Therefore, after I had obtained permission to access the field, I entered the clinical settings by using the gatekeepers from both countries. The power of the gatekeeper was discussed previously. The criteria for eligibility for participation were discussed between me and gatekeeper. Then a list of eligible participants was compiled, comprising different levels of paediatric nurses. From my experience in nursing practice, different levels of nurses could establish different outcomes from different experiences. Thus, four to five nurses were selected from each ward as the prospective list. If any participants withdrew during the study, I would recruit a replacement.

In terms of voluntary participation, prospective participants were informed by the gatekeepers directly and also by the PIS. Nurses who were interested in taking part in the study were contacted by me to provide further details and a consent form, and for the opportunity to ask questions to ensure that they fully understood their role and the researcher's role in the study. The rapport between the researcher and the participant developed during this process. This made participants feel more relaxed before they underwent observation. Participants carried out their jobs as usual after trust was developed. However, this depended on the time invested. In other words, the more time I spent developing the rapport, the more trust I gained.

3.10.4 Pilot study

Piloting a study is a trial or 'test run' carried out to determine the feasibility of a study. This includes the practicality of implementing a study as well as testing data collection tools such as interviews and observations.

Both the interviews and observations proposed in this study were piloted.

The first of the ten nurses in England and Thailand recruited onto the study acted as the pilot participant. The pilot interview and observation were analyzed to see if the data obtained addressed the research questions and if the methods proposed were feasible. Any necessary changes were made and in the case of substantial changes, the tool was re-piloted. In contrast, if no substantial changes were required, data from the pilot interview and observation were included with the data obtained from the other nine nurses. However, if the data collection tools were revised then the pilot data were not to be included with the data from the rest of the study. Additional staff was subsequently recruited.

Due to the level of data generated by participant observation, the interviews with participants were informed by a deeper level of knowledge and greater understanding of practice in the clinical setting, were more focused on their

experiences. This reflects the inductive manner in which participant observation was employed throughout the study and therefore exposed its strengths in ensuring that the research reflected the meanings attached by the social actor to social action (Whyte 1984).

3.11 Validity and reliability

Validity and reliability are extremely important for both quantitative and qualitative studies. There is little change of meaning to assimilate reliability and validity into qualitative study. Reliability in the quantitative approach means the consistency of a measure of a concept, while Mason (1996) argued that it is a measure of the quality, rigor and the wider potential of the research. Validity in the quantitative approach is concerned with the honesty of the conclusions that are generated from a piece of study. In other words, validity refers to an indicator for measuring a concept, whilst validity in the qualitative approach refers to whether what you have seen, heard and identified is an accurate representation of the reality.

Kirk and Miller (1986) and LeCompte and Goetz (1982) defined reliability and validity in qualitative research in new terms as follows:

- 1) External reliability means the extent to which a study can be replicated. In order to obtain external reliability, they argue that ethnographic research needs to adopt a similar social role to that adopted by the original researcher.
- 2) Internal reliability means whether multiple researchers or members of the research team concur about what they have seen and heard.
- 3) Internal validity means whether there is a good relationship between researchers' observations and the theoretical ideas they generate. LeCompte and Geotz (1982) also argued that internal validity tends to be the

strength of qualitative research, especially ethnographic research, because prolonged participation in the social life of society allows the researcher to ensure a high degree of congruence between concept and observations.

4) External validity refers to that which findings can be generalized across social settings. This issue seems to be a weakness in qualitative research when a small sample is employed (LeCompte and Geotz 1982).

The terms mentioned above are similar in quantitative research. Guba and Lincoln (1994) established new terms for use in qualitative research. They proposed two main groups of reliability and validity; trustworthiness and authenticity, which are concerned with fairness and ontology. Bryman (2004, p 16) identified "Ontology is a theory of the nature of social entities which can be separated into two model, objectivism and constructivism". Within qualitative research, "ontological position described as constructionist, which implies that social properties are outcomes of interactions between individuals, rather than phenomena, and separate from those involved in its construction" (Bryman 2004 p16). Trustworthiness (Guba and Lincoln 1994) includes four criteria as follows:

- 1) Credibility, which parallels internal validity
- 2) Transferability, which parallels external validity
- 3) Dependability, which parallels reliability
- 4) Confirmability, which parallels objectivity.

In order to validate creditability Guba and Lincoln (1994) suggested that the researcher should ensure that the study is carried out under the principles of good practice, and should present research findings to members of the social setting who were studied for confirmation that the researcher has fully understood that social world. The latter technique is often referred to as respondent validation, or member validation. Another technique they

recommended is triangulation. In order to raise dependability or reliability, Guba and Lincoln (1994) also suggested that all processes of the study should be audited by peers.

However, qualitative studies in particular are criticised for allowing interpersonal bias during interpretation. Thus, confirmability or objectivity is a difficult issue in qualitative research. The challenge is in ensuring that the researcher has not apparently allowed personal values or theoretical inclinations manifestly to sway the conduct of the research and findings deriving from it. To overcome this, Denzin (1978) advocated using different methods to collect data to enhance the validity and reliability of qualitative research. Similarly, Guba and Lincoln (1994) and Denzin (1989b) suggested that using respondent validation and triangulation can be helpful to obtain validity and confirmability.

In addition, the Hawthorne effect is another potential threat to the validity of clinical research (Pilit and Beck 2004). The term Hawthorne effect was coined after a study conducted at the Hawthorne Works factory between 1924 and 1932 looking at work productivity (Weber 2002). In this study productivity increased due to workers being observed. Therefore the Hawthorne effect describes the situation where participants know they are being observed and this causes them to change behavior (Pilit and Beck 2004). The Hawthorne effect may lead to data being collected which is not representative or reflect normal practice. One way of overcoming the Hawthorne effect is to undertake a prolonged period of observation so that participants return to their normal behaviours (McKenna et al 2007).

As described above, qualitative study is also emphasized in validity and reliability as in quantitative study, but it might be recognised in different ways. Within this study, I attempted to validate the study and minimize the weaknesses of a qualitative study as much as possible. The following describes how conformability, dependability, creditability and transferability was achieved.

Multi-methods, including participant observation and semi-structured interview were adopted within the ethnography context in order to obtain a rich understanding of the social setting. Multi-methods were used as parallel in triangulation design. Moreover, the triangulation design adopted in this study was not the only multi-method used, but the use of different investigators, including colleagues and translators, were also involved as investigator triangulation and member validation in accordance with Guba and Lincoln's suggestion (Guba and Lincoln 1994). Finally, a greater variety of clinical settings was also used in terms of triangulation of the site. These help to ensure that the weaknesses of the qualitative approach, such as internal bias, are minimized. Triangulation techniques can increase reliability or dependability and validity as a result (Guba and Lincoln 1994).

In this study, the use of multiple researchers is known as member validation in a qualitative study. A member validation technique was also employed in every process of the study. For example, any additional changes in this study, such as additional wards, were approved by colleagues. This method can help the researcher to balance between 'insider' and 'outsider', and can prevent personal bias as a result.

Documentary sources, such as IC policies and guidelines, were not the main data sources used to explore IC practices, but they were used for validation purposes. These include documents, written records, images, protocols, brochures and posters, which were relevant to the study in the fieldwork. They can increase the depth of data obtained in the field. For example, the hand hygiene protocol providing guidance on how to comply with proper hand washing can support the policies and guidelines adopted in England and Thailand. IC protocols, hand hygiene posters or guidelines as described above were used to support IC policy in the fieldwork, or to support the understanding of nurses who employ this guideline. In other words, they represent the level of knowledge and compliance regarding IC practice among the group being studied. Additional documents such as vaccine protocols were used to support what is similar and different in England and Thailand regarding vaccination

guidelines, because nurses could not provide this information as completely as the document. Hammersley and Atkinson (1995) identified that these sources provided information for situations that cannot be investigated by direct observation or questioning. In addition, documentary sources contain additional knowledge regarding the group being studied.

Tape recordings were transcribed by the researcher and two colleagues, one who is native English and one is Thai. After tape recordings were transcribed and checked by colleagues, they were sent to all participants to check what we had discussed during the interview. Minor corrections were done by the respondents because certain technical terms and acronyms were used. This method is called the respondent validation technique. Before coding, Thai transcriptions were translated into English by the researcher and co-researchers who were proficient in English and Thai languages.

Moreover, the selection of similar settings and similar representative sample groups has been criticized based upon criterion before selecting participants as described previously. This will determine its acceptability to others and, therefore, its creditability as a result (Guba and Lincoln 1994). All methods described above were used in the context of triangulation. These can also increase the internal validity of the study.

Credibility is a very important quality for qualitative studies. As previously described regarding Hawthorne effect, participants may perform better practice when they realized that they were being observed. Therefore, intensive follow-up observation was necessary to obtain more reliable data. Ideally, I would have liked to have undertaken prolonged fieldwork but was limited by the time available. Therefore, I spent as much time observing as I could, and continued to observe each participant throughout the study. When the rest of participants were observed in the same shift with the previous participant, I had seen what they had done. For example, when I intensively observed participants, they attempted to wash their hands properly, but when they realised that I did not follow them in this shift, they performed differently.

I also used peer group validation to increase credibility of data. When participants were interviewed, information from previous participants was used to elicit clarification and deeper responses. This method is called peer group validation. For example, what the investigator had seen and heard during the fieldwork which needed clarification was confirmed by using respondent validation and the peer group technique during interviewing. After the tape recording was transcribed, it was sent to the participant to check and confirm before coding.

3.12 Phased approach

The research was carried out using a phased approach. This reflected Flick's assertion that 'there are common single parts of the research process' (Flick 2006, p24), enabling different aspects of the research to be interwoven (Silverman 2001). The methods of phase application within the broader triangulation and comparative study design allowed the mutual interdependence of different methods and their phase application to be decided upon based on the special qualities (Brewer 1993) they offered in dealing with the sensitive and controversial nature of the subject matter. The use of this approach, therefore, reflected what Hammersley and Atkinson (1983) described as the characteristic funnel structure of ethnography, which becomes progressively focused over time.

The first phase was focused on participant observation and a small number of interviews in the clinical setting. This enabled gradual entry into the field and allowed rapport and trust to be gradually built up later. This was of supreme importance due to the level of distrust depicted by the nurse practitioners and other staff. For example, if the researcher did not put sufficient importance on this phase, participants could lose confidence and therefore may be less likely to participate in the second phase. Thus, adopting a phased approach allowed me to build up relationships with participants. The second phase focused on interviewing, including getting participants to talk, recording data and data

management. This included semi structured interviews with individual participants in order to explore in greater depth.

3.12.1 Phase one: Non- participant observation

In the phase approach, observations were adopted before the interviews began. Phase one comprised participant observation, which has been described by Bogdan as:

Research characterized by a prolonged period of intense social interaction between the researcher and the subjects, in the milieu of the latter, during which time data, in the form of field notes, are unobtrusively and systematically collected (Bogdan 1972:3).

Participant observation served the purpose of generating practical and theoretical notions regarding human life, which was based on the realities of social actors' daily existence and the meanings and taken-for-granted assumptions they attach to their actions (Burgess 1984). Participant observation is the most commonly used method of data collection in ethnographic research, to provide an opportunity to generate a depth of insight into the meanings of social behavior related to their actions within the clinical setting in this study.

Becker (1958) described the role of the participant observer as the gatherer of data by participating in the daily life of the group or organisation. However, roles of the observer differ depending on certain limitations. Burgess (1984) and Gold (1969) described four levels of participant observation used in ethnographic research-- participant-as-observer role, observer-as-participant role, and participant only and observer only. There are strengths and limitations within each role. For example, the role as complete participant is associated with covert studies, where the researcher covertly becomes a completely engaged participant in the group being studied and this provides accurate information and in-depth understanding. Due to its covert nature it raises a number of issues which would arguably be almost impossible to justify in the current research situation (Humphrey 1970). The role as complete observer is that

which entails the role of the researcher being limited to one of mere observation, and is a role which is rarely used.

As discussed previously in the participant recruitment section, the roles of participants and observer were discussed before conducting the research, such that I intended to conduct non-participant observation or observation only because I was not employed by the hospitals and did not hold a contract with them (whilst I was registered to practice, this does not allow me to practice in England as a practitioner nurse). Throughout the pilot study, I realized that observation could be suitable for obtaining data about natural habits if the participants did not know that they were being observed, and participants were likely to change their activities or behaviours as soon as they realized that they were being observed by the researcher. I was not employed by either of the hospitals where I conducted data collection and was therefore a non participant observer. However, within this role my conduct was varied. In Thailand, where I am a qualified nurse I was able to assist the nurses with some simple activities. Whereas in England, where I have never practiced, there were fewer opportunities for me to work with the nurses while I observed them. In both England and Thailand I saw that participants felt nervous while they were being observed. Assisting them with simple tasks, such as passing something to them or looking for something, made the participants feel more at ease.

My observations were overt rather than covert. This meant that I was open and honest and explained the purpose of my presence from the outset. As Burgess (1982) described, it is necessary for the researcher to remain a 'stranger' whilst being involved in the social setting in order to maintain enough social distance to observe and analyze the activities under study. Thus, it is also important to note that this role does not include the researcher involving herself in all activities of the group.

Moreover, throughout participant observation, relationships between the investigator and the dependent were progressively developed. It could be observed in the beginning of participating that some of the participants who did not meet the researcher before observation, but were contacted via the phone instead because they were not available, felt a bit nervous. Over time the researcher was able to develop a level of trust, and participants felt more comfortable and natural habits were present as a result. Obtaining this level of acceptance reflected the level of immersion that participant observation afforded, and also the extent to which researcher presence became 'taken for granted' at the research site.

Where staff were observed interacting with children, data specific to the children were not collected. Posters and information leaflets were given to all parents advising them of the study before observing. However, the situations relating to IC practice were observed, such as negotiating between nurse and parents or guardian regarding preventing infection in their child, and all data were treated anonymously as for the participants. Parents who did not wish their children to be included could opt out.

Moreover, throughout this period, I was also able to identify healthcare staff who engaged with IC practice, relationships between staff, cultures of working, hierarchy and construction of the clinical setting. This was because, according to the literature reviewed, these are also likely to affect IC practice, and one of my major concerns about adopting an ethnographic approach was different cultures, which could contribute to different IC difficulties and successfulness. This is apparently most important in participant observation, which seeks to gain in-depth data in its own right regarding meanings associated with IC practice in the clinical setting.

As Murphy and Dingwall (2001) argued, the difference between covert and overt participant observation is much more complicated in practice than in theory, as in complex and mobile settings it may be 'impractical to seek consent

from everyone involved' (Murphy and Dingwall, 2001). Indeed, I had no control over who entered the public environment of the field and this also limited the extent to which people could be approached to explain the purpose of the research. In addition, as Hammersley and Atkinson (1983) described, even when research is overt, participants often forgot this due to the level of immersion achieved by the researcher. Hammersley and Atkinson also argued that even when participant observation is conducted in an apparently overt manner, ethnographers rarely tell all participants everything about the research (Hammersley and Atkinson 1983). This reflects Ditton's assertion that all research employing participant observation techniques is 'intentionally deceitful' (Ditton 1977).

However, as discussed earlier, my biography was provided to participants to ensure that my role as a researcher was explicit at all times. This helped to ensure that inadvertent deceit was not employed. Therefore, the best that could be hoped for was to offer as thorough an account of the purpose of the research at every opportunity, incorporating a warning that the research may alter slightly in a different direction as data shed light on other areas of importance. For example, when meeting doctors or other nurses the clinic, I would introduce myself and explain the purpose of the study and what I was going to do in the clinical setting before they cooperated as research participants.

Observations were carried out for three months in each hospital in the clinical settings. Each consenting nurse was observed throughout at least one shift (8 hours). Nursing interventions regarding IC practices were observed throughout the shift. All relevant staff and situations relating to participant practice were involved in observation, including listening to things that happened. This is the principle of ethnography, to explore everything related to the research question, but all relevant workers were anonymized and were described as part of the collective view of the clinical setting. Only data relevant to this study were recorded. The focus of the observations was on practices which may promote or prevent the spread of infection.

Informal interviews were conducted within a conversation between the researcher and participants to clarify some issues during observation, for example when I saw something that might be useful for the study and needed a quick response from participants, such as regarding the use of equipment. What, when, where, why and how are useful questions to obtain rich data while doing observations. Short notes were taken first during observation, and then written up with further detail on the same day after the observation was completed for that day. This process will be described in further detail in the recording observation section.

Recording observations

Fieldwork notes establish a centrally important element of participant observation. As Hamersley and Atkinson argued:

A research process can be as well organized and as theoretically sophisticated as you like, but with inadequate note-taking the exercise will be like using an expensive camera with poor-quality film. In both cases, the resolution will prove unsatisfactory, and the results will be poor. Only foggy pictures will result (Hamersley and Atkinson 1983:175).

In order to ensure that observations were thoroughly and contemporaneously recorded, Hamersley and Atkinson (1983) suggested jotting down what you see and hear without interference to the complexities of recording observations. Parker (1974) argued that the researcher should select what is and what is not to be recorded. He suggested that it should not be an observed event which can refer to other events because it is physically impossible to record everything during observation. In addition, if the researcher writes down everything during observation, it can make participants feel reluctant to follow their normal habits.

Thus, I initially informed participants at the beginning of the recruitment process in order to ensure that they were willing to be observed and recorded into the field notes. In addition, informal interviews were used during observation. During each observation I made rough notes on a small sheet of blank paper –

field notes. These included all observed actions and conversations undertaken by the nurses under observation. In order to avoid stressing participants and interrupting participant interventions, short notes were made after the intervention at a convenient time, such as during coffee break. Later that day, following each observation, I wrote fuller notes and also transferred details of the nurses' activities to the checklist.

The observations were facilitated using an observation schedule developed from IC guidelines from both countries, and related to the standard guidelines from major organisations including CDC, WHO, APIC and EPIC. This included lists of possible activities which the nurses were recommended to carry out, such as hand washing or communicating with specific professional groups. Participant observation guidelines were adopted to guide what issues needed to be addressed during the observation, and also to act as a reminder to start writing up the additional details after observation.

Weaknesses of the observations

One of the major criticisms in participant observation methods is subjectivity and the risk of 'going native' (Cohen and Manion 1994). The dangers of researchers utilizing participant observation and 'going native' focus on the subjectivity of participant observation as a method of data collection, which has the potential to impact on the subsequent analysis. Rock (1979) argued that when conducting participant observation, the researcher is faced with two contradictory imperatives – to be both inside and outside the social scenes which he or she explores. Rock also argued that this leads to an irreconcilable difference between interpretation and analysis, which causes a tension which can never be fully dispelled (Rock 1979).

Thus, the balancing of social distance and immersion has been discussed (Jacobs 1998). Jacobs (1998) recommended that a balance needs to be struck between maintaining enough social distance to be able to conduct participant

observation effectively, and maintaining enough social distance for an effective solution to bias and over-rapport that is brought on by too strong an identification with those being studied.

In this study, I attempted to balance this issue by using the 'withdrawal and return' technique. Whilst the social distance was reduced throughout the phased design of the research, the length of time spent in the field was prolonged. Withdrawal from the field for two or three days at a time to write notes up or to work with previous data occurred on a regular basis. This was helpful to avoid 'going native' by maintaining adequate social distance.

In addition, according to the Hawthorne effect, participants may change their behavior due to the attention. This may affect the validity of the study as a result. Preventing subjectivity and obtaining validity and reliability were discussed earlier whereby a triangulation technique, prolonged period of observation in the fieldwork, and peer reviews were employed in this study at every process. These can also increase the validity and reliability of the study.

3.12.2 Phase two: Interviews

A critical analysis of different interview methods is presented in this section. A discussion of the efficacy of employing ethnographic semi-structured interviews, as opposed to other forms of interviews, is presented. Finally, a critical analysis of the strengths and weaknesses of this method are discussed.

The most common form of data gathering in both quantitative and qualitative approaches is interviewing. There are different kinds of interviews, and the most common is the structured interview, which is frequently used in survey research because it is extremely useful to elicit informants' views and experiences (Bryman 2004). Although interviews are similar to conversation, situations are not normally associated with casual conversation (Silverman 1985; Denscombe 2003). Burgess (1984) described qualitative interviews as 'conversations with a

purpose' and showed that many initial research interviews consist of informal questions and answers. The research interview is more than a conversation because the researcher tends to build a relationship with the participant.

Interviews yield rich insights into people's opinions, beliefs, attitudes, aspirations, and feelings. In addition, using face-to-face interviews can promote rapport between the interviewer and informant, which may not be developed during observations (Denscombe 2003). However, the researcher needs to understand the dynamics of interviewing to sharpen their own use of the method and understand the different methods of conducting interviews and analyzing the data, together with an awareness of their strengths and weaknesses (McNair 2008). Types of interviews are described in the next section.

Types of interviews

There are several types of interviews employed in social and healthcare research. According to Denscombe (2003), there are three main types of interviews used for collecting data, as follows:

1) The unstructured or non-standard interview

The unstructured interview usually starts with general questions in order to promote a rapport between the interviewer and the informant, which is also useful to trigger the participant's memory. This type of interviewing allows flexibility for the researcher to follow the interests and thoughts of the informants.

2) The semi-structured interview

The semi-structured interview is frequently used in qualitative research. Questions follow an interview guide which focuses on the study area or the

research outcomes, but the sequencing of questions is not the same for every informant. It depends on the process of the interview and each participant's answers. An interview guide is used to ensure that the researcher collects similar types of data from all informants. This method is better than unstructured interviews in terms of saving time and excluding irrelevant information (Holloway and Wheeler, 1996).

3) The structured interview or standardized interview

The structured interview is one of a variety of forms of research interview. It is commonly used in survey research. The interview schedule, containing a list of questions, is used in a structured interview. In this type, each informant is asked the same questions in the same order. However, this type of interview is rarely used in qualitative research because useful data which could afford insight into the social milieu being studied is missed (Burgess 1982), except to elicit socio-demographic data such as age or duration of experience (Denscomb 2003).

Moreover, May (1991) and McLafferty (2004) argued that an additional type of interview is group interviews. As described above, the choice of interview technique can reflect the epistemological and ontological position of the researcher, and whether quantitative or qualitative data are being sought (Burgess 1984). Thus, the decision as to which form of interview to employ in this piece of research depended on the extent to which the style of interviewing adopted would fit into the ethnographic approach.

In this study, the unstructured interview, or informal interview, was utilized throughout observation in the field because it is flexible and used as informal rather than formal. As Kvale (1996) describes, the qualitative researcher employing the unstructured interview endeavours to conceive the world from the subject's point of view, to reveal the meaning of people's experiences, to expose their loved world. Moreover, the semi-structured interview was considered to be the main method to obtain fruitful data in this study alongside

participant observation. Ethnographic semi-structured interviews will be discussed in the following section.

Shaping ethnographic semi-structured interviews

Ethnography usually involves a substantial amount of interviewing, and this undoubtedly contributes to the widespread use of qualitative research (Bryman 2004). Ethnographic interviewing is a qualitative research technique which is rooted in anthropology, where interviews have traditionally been conducted in the field during lengthy research studies (Whyte 1982). In this study, data had already been generated by participant observation, but I wanted to ensure that I was accustomed to various shades of meaning that informants attached to situations. Thus, in this study, semi-structured interviews were conducted in parallel with participant observation in the triangulation design.

In relation to semi-structured interviews, May (1991) argued that questions are normally specified within this study, but the interviewer is more free to probe beyond the answers. This means that this approach is more flexible than in structured interviews. Moreover, Strauss and Corbin (1990) purported that this type of interview is grounded and structured by the concepts, categories and codes identifying during observations, which are defined in the early stages of research. Therefore, employing semi-structured interviews as a part of an ethnographic research design allowed the strength of both structured and unstructured interviews (Matza 1964).

In addition, utilizing semi-structured interviews allows informants the freedom to introduce materials that are not anticipated by the interviewer. For example, some evidence was presented by informants during interviewing such as IC protocols. This depends on the journey of the interview, and is facilitated by the informal conversational approach used by the researcher. Adopting a semi-structured interview also provides an opportunity to clarify and elaborate on

topics or themes unearthed during the interview process. Thus, rich data is gathered during interviewing.

Furthermore, utilizing the themes identified in the observation phase to inform the semi-structured format also provides an element of comparability in the data obtained (Fielding 1993). For example, participants were questioned to confirm the way they worked or why they worked in this way. The results of this questioning were surprising because conclusions from observed activities were different from conclusions of heard conversations. Thus, this approach is helpful to confirm data produced in terms of comparability.

In this study, I stressed the importance of linking interviewing and observation. Observation guided the key questions needed to be clarified by the respondent while it helped to interpret the significance of what I saw during observation. Thus, questions were developed through reading relevant literature focused on IC practice, and were also influenced by observations. The questions had an in-depth focus on motivations, behaviours, beliefs and feelings regarding IC practices.

Getting research participants to talk

The interviews were conducted after the participant observations. This allowed a level of trust to build up during the period of observation, which would be used to reduce the social distance in the context of the interview. Gaining and maintaining trust are very important in the ethnographic approach. As Johnson (1975) argued:

Personal relations of trust are the basic ingredient for a research project which intends the collection of truthful information, data which retain the integrity of the actor's perspective and social context. Such relations are essential for any project which seeks to penetrate the public fronts of our everyday lives (Johnson 1975: 121).

Indeed, it took over 3 months for one main group of paediatric nurses in England to begin to accept me as a researcher. It started from the recruitment process which allowed me to build up a rapport and also during participant observation. However, I had to be careful about the level of immersion to prevent 'going native' as discussed before. Thus, the balance between social distances and going native was maintained appropriately.

The interviews took place after the nurses had been observed. The same 20 nurses who consented to take part in the observations, therefore, were interviewed. Following each nurse observation, an appointment for further interviewing was made between the researcher and participant, which depended on the participant's timetable due to shift work patterns. Some interviews were done a couple days after observation while some others were done more than one or two weeks later. Thus, it is necessary to allow plenty of time for this process.

Each interview took at least one hour and was conducted in the hospital which is sufficiently private. The role of a good interviewer is getting interviewees to talk in an 'un-forced way' (Sapsford 1996) in order to get them to tell their story. The intention of this research was to conduct interviews so that interviewees could tell me everything about their IC experiences or their lives. I considered that the semi-structured interview format and opportunities for interviewees to deviate afforded them a degree of control over the direction of the interview, and went some way to achieve a balance in the power dynamic of the interview. However, it was also necessary to carefully consider that the nature of the interactions can shape the power dynamic of the interview and affect the meaningful engagement of the interviewee.

As Hammersley and Atkinson (1995) described, the interviewer must be an active listener; he or she must listen to what is being said in order to understand how it relates to the research focus and how it may reflect the circumstances of the interview. Throughout the interview, I ensured that I adopted a relaxed style,

followed what was being said and utilized body language such as nods and gestures which indicated that I was interested and engaged in the conversation all the time (Palmer 1928). I also paraphrased elements of the conversation in order to ensure that I had fully understood the meaning of their statements. This method was used as a measure of my own understanding and a method of verification.

Recording interviews and management of data

May (1991) acknowledged that tape recording interviews has benefits and limitations in relation to interaction, transcription and interpretation within qualitative study. This could become an ethical issue if permission was not obtained before proceeding. Thus, this process was considered and discussed since the researcher had submitted the ethical approval applications.

In this study, language was used differently between Thailand and England. Thai language was used to interview Thai participants while English language was used for English participants. Interviews were conducted by the researcher. Interviews were tape recorded with the permission of the participant. Tape recordings were transcribed.

Thai language recordings were transcribed into Thai language first, and then they were sent to participants for respondent validation. Then they were translated into English language word by word first and then transformed into English sentences, and were confirmed and corrected by colleagues who speak English as their first language and also understand Thai language. This was due to the comparative study and the way the data were coded, which only supports the English language. English tape recordings were transcribed directly in participants' own terms.

In order to give assurance of the creditability or dependability of the data, interview transcripts were sent to participants to check the interpretation and

reconstruction of the data before they were coded by software called NVIVO. Then the researcher also discussed the results of the syntheses with experts in this field, including ICN, supervisor and academic colleagues, to ensure what I saw and in order to prevent subjectivity and to check for validity reliability (Lincoln and Guba 1985).

Weaknesses of the Interview

When arranging interviews in such a manner the scheduling of an appropriate time and place must be considered at an early stage. There are no studies that have discussed the most appropriate place for the interview because different places influence different things, and can both benefit and interfere. As Cook (2007) found, interviewing at the participant's home raised valuable insight into his participants. However, participants might refuse if the interviewer and interviewee are different genders. This is because the research participant may feel stressed and nervous in the presence of a stranger in his or her private home (Crang and Cook 2007).

"Many women understandably are often reluctant to invite unknown men into their homes"

(Herod 1993:309)

According to Herod, it can be inferred that the issue of different genders could influence where the interview takes place.

Thus, in order to succeed, arranging the meeting should depend upon both interviewee and interviewer. Crang and Cook (2007) argued that a compromise between the interviewer and interviewee is best when arranging a place for the interview, such as a place of work or leisure.

However, there are various difficulties in relation to this method, including arriving at the wrong place and a participant who fails to arrive. These difficulties occurred several times in this study. As research participants are nurses, they work different shifts every day; most of them offered to be

interviewed at work before or after their shift. The nurses, who often preferred to meet before work, were often late. This meant that interviewing was postponed until the next shift.

Moreover, regarding the length of time spent interviewing, Crang and Cook (2007) suggested that the researcher should prepare themselves before doing interviews, including understanding the interviewer's role, preparing the right questions and effective time management. These are extremely important for interviews. Prolonged interviews may happen if the researcher did not manage his or her time effectively.

In this study, I practiced interviewing with colleagues, and did the pilot study first. This helped the researcher to learn how to be a good listener and how to encourage the interviewee, and how to manage time within limits. However, in terms of semi-structure interviews and ethnography, sometimes I allowed the interviewee to talk as much as they wanted if they had time to talk. This was because the more they talked, the more they relaxed. Rich data were provided this way rather than speaking with interruptions from the researcher. For example, if I encourage participants to talk as soon as they are available, they will feel more relaxed than if I focus only on IC queries and interrupt them if they talk of other issues.

3.12.3 Reflexivity

Reflexivity acts as a bridge between interpretation and the process by which words are conveyed. Reflexivity involves reflection by the researcher on the social processes that influence the data. This might affect both the writing up of the data, called data representation, and the data status, standing and authority, called legitimation (Brewer 2000). Reflexivity is associated with the idea that the researcher's representation of reality is partial, partisan, and selective. Thus, I require a critical attitude towards the data, and concern regarding factors influencing the research such as the relationships between the researcher and

participants, and social interactions between the researcher and the clinical setting.

Reflexivity has been argued by Hammersley and Atkinson (1983) to present a rejection of the idea that 'social research can be carried out in some autonomous area insulated from the wider community, and the particular biography of the researcher' (Hammersley and Atkinson 1983). This issue has particular relevance in relation to particular observations owing to the level of immersion it affords in the clinical setting in this study.

In fact, when adopting participant observation as a method of inquiry, one of the main strategies which have been identified for ensuring a valid conclusion is reflexivity (Sapsford 1996). This refers to the researcher remaining as aware as possible of their own impact on the situation they wish to study. Moreover, the researcher needs to be conscious of the meanings attached to the social role which has been assigned to them within the group.

In addition, reflexivity is also related to ensuring that one is appreciative of how these issues affect the research process, and the importance of considering how the involvement of researcher in a particular social setting may have led to changes within the group they have been observing. This reflects the importance of acknowledging that the researcher is part of the social world, and that this is not a matter of methodological commitment, but is an existential fact (Hammersley and Atkinson 1983). This means the researcher could potentially be affected by the study, and there is no way to study the social world in isolation without some form of interaction.

Thus, this issue requires being aware of how researcher preconceptions could affect the interpretation of the data and, therefore, critically assessing how the presence of the researcher could influence the fieldwork site. Sapsford (1996) noted that the reader can make their own judgment regarding the validity of the findings by reading the details in the report. The researcher should be

conscious of this when recording field notes and a full analysis should appear in the final report. In order to avoid this problem in this study, I ruled out the idea of conducting the fieldwork where I have worked to avoid influencing the fieldwork by my professional position.

3.13 Analysing the data

Seale (2005) argued that the activity of identifying themes in qualitative data can be referred to as qualitative content analysis, and the heart of this is the process of open coding. He also argued that a good coding scheme relates to the literature review, and is the bridge between research materials (data) and theoretical points (Seale 2005). Strauss and Corbin (1990) define open coding as part of analysis that focuses on 'the naming and categorizing of phenomena through close examination of data'. During open coding, data were safely kept, closely examined, compared for similarities and differences, and questions were asked to consider the phenomena as reflected in the data. Within this process, one's own and others' assumptions regarding phenomena are questioned and explored, resulting in new discoveries (Corbin and Strauss 2008).

One of the drawbacks of ethnographic research is the sheer volume of data obtained from watching, asking and examining (Wolcott 1992). It has been argued that 'a potential problem of ethnographic studies is seeing data everywhere and nowhere, gathering everything and nothing'. There is a growing amount of unconnected data (Charmaz and Mitchell 2001). Thus, even if an ethnographer balances between 'knowing it all' (Charmaz and Mitchell 2001) and being sensitive to what can appear mundane, a large amount of data will be produced. This study was no exception, and therefore a methodological approach to data management was important in order to facilitate the analysis without 'drowning' in data and the subsequent analysis becoming confused.

In the first phase, I was immersed in the clinical setting where data were produced to become familiar with data and understand the culture that people

inhabit and their relationships with one another (May 1991). May recognised that this process of becoming immersed in the data is extremely important, and that the process of analysis should not override the need to become familiar with the data produced (May 1991). Therefore, in the first phase I began by making a short note into the field note, and then described further details of observations and conversations in the research journal. During 16 months in the setting both in Thailand and England, data was regularly revisited and reviewed. The literature was reviewed broadly as well. This immersion facilitated the process by which data were conceptualized (Struass and Corbin 1990). The labeling of concepts was broad. For example, IC perception between nurses, IC in public perception (view of outsider), paediatric patient perceptions and parents and visitor's perceptions were additionally reviewed.

The initial conceptual labels were then grouped into themes or categories (see in tree node figures 5). Struass and Corbin (1990) defined categories as 'a classification of concepts discovered when concepts are compared one against another and appear to pertain to a similar phenomenon'. Therefore, the ideas are grouped together under a higher level, more abstract concept called a category (Struass and Corbin 1990). These categories incorporated a range of related concepts into them. In this study, IC perceptions between nurses were grouped under the category of IC perspective. This form of coding was utilized as it served to 'disaggregate(s) the text (notes or transcripts) into a series of fragments, which are then regrouped under a series of thematic headings' (Silverman 2001). Samples of coding used in this study are presented in the following section.

3. 13.1 Coding data

The coding process and analysis of data are important parts of qualitative study. In doing this, data from both participant observations and interviews were looked at carefully.

1) Analytic field notes

Analysis began at the time of data collection during the fieldwork. Thoughts and interesting observations such as clinical guidelines or protocols were recorded as analytic field notes with their participants' meaning. Field notes were transformed into journals every day after observation. Research journals were made in parallel with the semi-structured interviews. Analytic field notes suggested a number of possible themes emerging from the data. Certain themes from analytic field notes needed to be clarified in depth from the semi-structured interviews as can be seen in Table 3.

Table 3 Concepts obtained from the analytic field notes

- Variety of IC practices
- Policies and IC guidelines
- Environment management, infrastructure and isolation criteria
- Equipment management
- Relationships between people
- Specific concerns regarding children
- Plenty of equipment and limited equipment
- Load of duties and proper duties
- Link nurses or infection control ward nurses roles
- Experienced and novice
- Consistency and inconsistency
- Difficulties and why some practices were not strongly concerned

2) Analysing interview data

Open coding of interview transcripts involved each record, which was read line by line with the distribution of chunks of data into various codes. The phenomena that related to the research questions were critiqued and labeled. Similar phenomena were coded according to categories identified from the previous interviews, with other categories also emerging. As more data were

collected, data coded to each category were reviewed to compare data bits and see connections with one another. This method of comparing led to the development of theoretical properties of categories. Then I outlined the connections between concepts and categories. Finally, data were developed into main themes by integrating similar phenomena or subcategories into categories, respectively. In doing this, the phenomena have not only been labeled as things related to the literature review, but they also come from different perspectives and insights provided by participants. Consequently, the concepts were developed from the theme.

The variety of themes produced by NVIVO version 8 was presented below. This programme was employed to import sources (research journals from observations and interview transcripts) which were in Microsoft Word format in order to code them by attaching a label to them (see Figure 3).

Figure 3 Sample of a label

Interviewer : Yes, and in the infection control guideline which one is the most difficult to comply for children in your view?

Interviewee: For us?

Interviewer : Yes

Interviewee : Kids washing their hands, the hand washing is so hard. I mean even with your own kids at home, its so difficult to get the kids to wash their hands constantly all the time when they garden play –I know its different here but here their playing with crayons, they're interacting with other kids and its trying to keep them on top of that they are washing their hands regularly they're not passing things around. But kids are kids unfortunately so it's very difficult.

Most importantly, NVIVO was adopted to code the passages of text to 'nodes'. The types of nodes used in this study were both 'free nodes' and 'tree nodes'. 'Free nodes' provide the overall phenomena obtained in this study and 'tree nodes' provide the linkage between phenomena presented as a hierarchy of nodes or themes. Thus, two levels of nodes, 'parent nodes' and 'child nodes' were applied as the 'main themes' and 'child themes' in this study, as can be seen from the Figure 4 and 5.

Figure 4 Sample of free nodes obtained from the observations journal

Free Nodes					
Name	Sources	References	Created On	Created By	
Wound care	3	3	03/03/2010 15:3	DMU	
Variety of NI	2	2	03/03/2010 15:3	DMU	
Variety NI- MRSA	2	3	08/03/2010 12:2	DMU	
Urinary care	3	3	05/03/2010 13:4	DMU	
TPN care	6	9	03/03/2010 15:3	DMU	
Safe disposal and sharps	6	8	03/03/2010 15:3	DMU	
Routine lab	1	1	09/03/2010 12:1	DMU	
Respirator care- mouth care	2	2	09/03/2010 11:5	DMU	
Respirator care	8	9	03/03/2010 15:2	DMU	
Researcher participant	4	10	08/03/2010 12:1	DMU	
Relationship btw nurses or HCAs	6	10	03/03/2010 15:2	DMU	
Rel between nurses and patients or pa	7	12	03/03/2010 15:2	DMU	
Rel between nurses and doctors	1	1	04/03/2010 15:5	DMU	
Rel between doctor and parent	2	3	03/03/2010 15:2	DMU	

Figure 5 Sample of parent nodes and child nodes obtained from participant

Tree Nodes					
Name	Sources	References	Created On	Created By	
Environment management	0	0	12/10/2009 12:32	DMU	
limitation of visitors	23	32	12/10/2009 12:59	DMU	
Uniform and slipper	14	20	12/10/2009 12:59	DMU	
Toy management	4	6	12/10/2009 13:00	DMU	
patients management	28	48	12/10/2009 13:01	DMU	
Keep unit dry and clean	15	21	12/10/2009 13:02	DMU	
Removal all spillages	12	14	12/10/2009 13:02	DMU	
disinfectant usage	16	23	12/10/2009 13:03	DMU	
hectic wards	8	12	22/10/2009 16:10	DMU	
Domestic clean	2	2	18/11/2009 12:27	DMU	
Hand hygiene	0	0	12/10/2009 12:35	DMU	
personal concern	23	66	12/10/2009 13:12	DMU	
hand hygiene difficulties	15	30	12/10/2009 13:13	DMU	
Technique proper VS not p	20	29	12/10/2009 13:13	DMU	
hand care	4	5	12/10/2009 13:15	DMU	
removal all wrist and jewell	12	15	12/10/2009 13:17	DMU	
unconsistency	9	11	23/10/2009 14:36	DMU	
Use of protective equipment	0	0	12/10/2009 13:23	DMU	
Gloves	29	71	12/10/2009 13:23	DMU	
Mask	24	46	12/10/2009 13:24	DMU	
Apron and Gown	20	37	12/10/2009 13:25	DMU	
Cap	10	11	12/10/2009 13:25	DMU	

In doing this, data were coded twice by re-reading and re-coding to ensure that I did not use two or more words or phrases to examine the same phenomenon and lose any important phenomena.

Further interviews and observations were coded in the same manner where data did not fit other concepts that were identified, which in turn shaped categories and, as a result, further codes were identified. In this manner the data served to inform the development of emergent themes across the data collected. As regularities and irregularities appeared in the raw data, concepts, categories and codes were revisited and re-appraised. In this way, the resulting themes were deemed valid (Miles and Huberman 1994). Thus, as Miles and Huberman defined when a hypothesis, theme or pattern is recognised inductively, the researcher moves into a verification mode, trying to confirm or qualify the findings. This ensured that I was able to:

(1) 'Compare data to data from the beginning of the research, not after all data are in; (2) compare data with emerging categories; and (3) demonstrate relations between concepts and categories' (Charmaz and Mitchell 2001:161).

This process began when the first data were collected and analyzed. The codes themselves were open and emerged out of the analysis of data. As more data was generated, codes were revisited and developed into emergent themes and where existing codes could not accommodate new data, new codes were developed. In this way, codes remained active throughout the research process.

3.14 Chapter summary

This chapter has outlined how ethnography was selected and used within this study. In doing this, the strengths and weaknesses of other research methodologies were critiqued before deciding which methodology would be used. The triangulation design of both observations and interviews was adopted in this study in order to provide a richer understanding. Participant observation and the semi-structured interview were discussed and employed in the study.

This chapter has outlined the practice of implementing ethnographic fieldwork and the problems encountered in doing so. In summary, this chapter has outlined how ethnography was employed in this study to explore the factors contributing to IC practice using a comparative design between two countries. The following results chapter presents the findings from the observations and then findings from the interviews.

CHAPTER 4: RESEARCH FINDINGS

4.1 Introduction

This chapter presents the data generated by multi-method data collection, which included non-participant observation and semi-structured interviews. Data were collected from ten nurses in one hospital in England and ten nurses from two hospitals in Thailand. Observations were conducted over a period of 3 months in each country. One nurse was observed for at least one day shift, and was then interviewed for at least one hour. Additional supporting information, such as clinical guidelines, was obtained when necessary. Throughout the analysis, the role of nurses within the context of IC practice was considered. This includes observed clinical practice and also explores the context of the environment, guidelines and policies in relation to IC practice.

The previous chapter (figures 3, 4 and 5) shows how themes were generated from the data. The findings are illustrated in relation to themes which emerged during the research process as being fundamental to IC practice. These themes were verified by research participants as outlined in the previous chapter. The themes themselves were identified as important by paediatric nurses based on their experiences of nursing practice in paediatric wards. A large amount of data was generated since data were collected during the fieldwork by analytic field notes and relevant IC protocols, and then further data were generated from semi-structured interviews. This chapter presents examples from each of the themes which are then discussed in the following discussion chapter.

The chapter will begin with themes generated within this study and how they influenced infection control practice in paediatric wards in Thailand and England.

4.2 Themes generated from the study

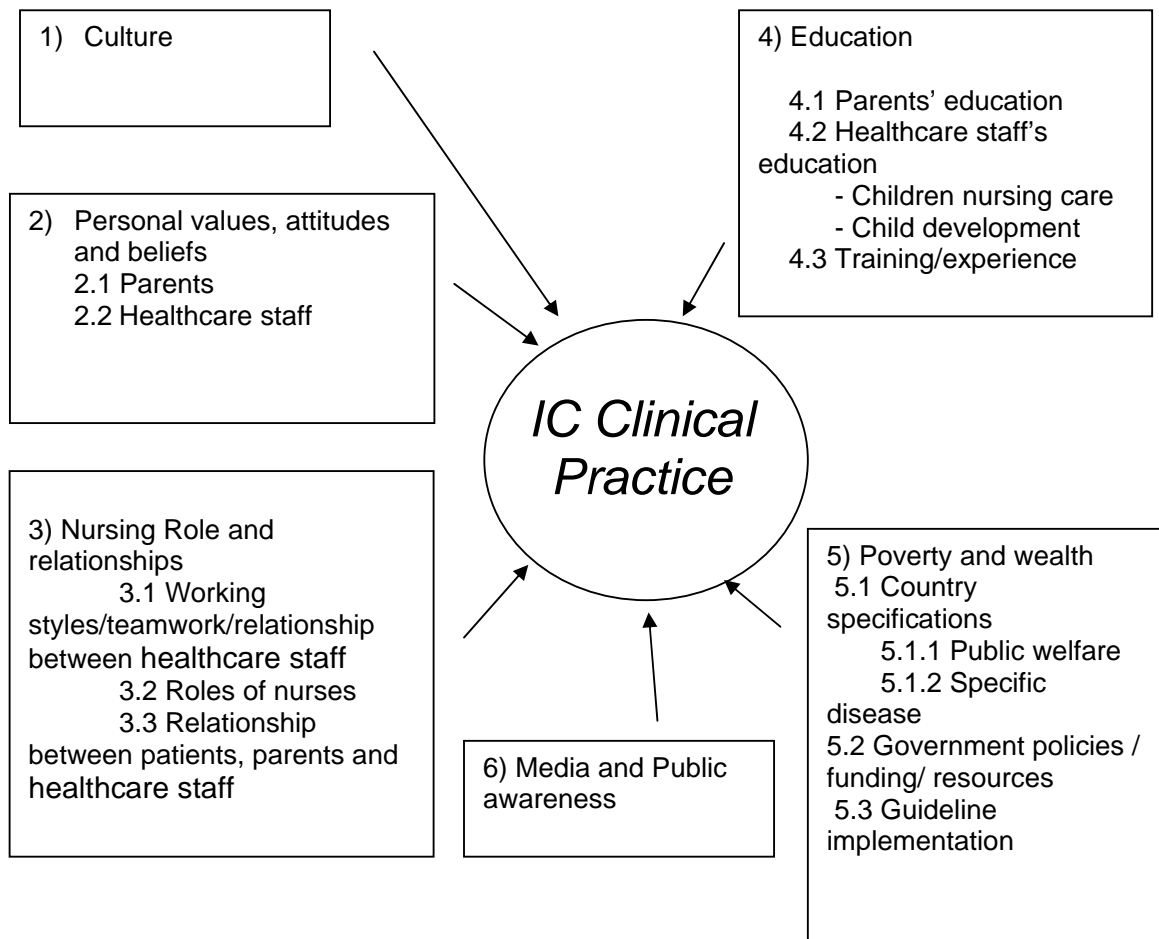
Themes generated from both the observations and interviews were continually refined until seventeen factors were identified (Figure 6).

Figure 6 Seventeen factors influencing IC Practice between Thailand and England



These seventeen were arranged into six major groups presented in figure 7. These groups have been numbered from one to six. The order reflects the frequency with which the themes occurred.

Figure7 Six major factors influencing IC Practice between Thailand and England



4.3 Presentation of data

Geertz(1988) argued that it is clearly important that data are represented in a manner which communicates what the ethnographer has learnt from their immersion in the field. Data also communicates the experience of being there to the reader. This relates to issues of power, sensitivity in relation to representing the social group researched, and textual conversation (Atkinson 1992).

Presenting participants' own words into the written form was achieved through this process.

Even though themes from the findings were discussed and links were made with different perspectives, it was also important to consider the voice of

paediatric nurses in their own words. As Fleischer (1995) argued, natural speech is a 'powerful' analytical tool. Untouched by political rhetoric or researchers' ideological and theoretical bias, natural speech in the social context is a metaphor for speakers' feelings, attitudes, drives and emotions. Atkinson (1992) argued that these textual conversations are applied by the researcher in order to represent the speech or voices of research participants.

In this chapter, the presentations of participants' interviews are provided in the first person narrative style in English. Preston (1985) has identified that this form of presentation has the capacity to contribute to the reader seeing the research participants as 'others'. However, in terms of presentation to readers who are mostly English, and due to the length of the thesis, Thai participants' data was transcribed in Thai first, and were then converted into English by the researcher and colleagues who are capable in both English and Thai languages.

4.4 Factors Influencing IC Practice in Thailand and England

Data will be presented from factors frequently observed to factors less frequently observed in the clinical setting. Data from the observations and interviews are presented in the research participants' own words.

4.4.1 Culture

As I observed in the clinical setting both in Thailand and England, I saw many differences between two countries relating to the cultural context, including religion, life styles influencing child development and social structure.

Religion and Life styles

During observation, I had seen that culture is a key factor inspiring attitudes, beliefs, and life styles in patients, parents and healthcare staff. Cultural issues, which influence healthcare staff, mostly relate to working styles and were

presented in section 4.4.3.2. Different cultures, including religion, life style and the way in which parents care for a child result in some difficulties of IC practices in parents both in England and Thailand as follows.

It had already been mentioned that English parents appear to be more assertive than Thai parents. For example, when they saw a nurse do something different from another nurse that they had seen previously, they immediately asked questions (Observation 3, 4 and 10 England). Another example is that I rarely saw nurses in England remind parents or visitors when they went into the unit that no more than three people are allowed to visit, or when parents or visitors did not wash their hands, or when parents or visitors sat or laid on the patients' bed (Observation 2, 5 and 6 England). However, I saw nurses in Thailand immediately remind parents to tie their hair up, to get out of the bed and to wash their hands before touching their child. I asked the nurse after observation and this information was obtained during interviewing:

"They do sleep on their own extra bed, we don't let them sleep on other patients' beds but when they build a relationship with another family, sometimes they do and it's so hard to stop that. And it's like that with the children as well you know, I mean two of my children went and sat on another child's bed and it's hard to say like... no you go to your bed, because they develop friendships and that make the experience more pleasurable doesn't it. But then it's about looking at everything as a whole and they're not infected and they're not infectious. The risk of passing things on is very minimal, the parents are kind of conservative, and we are trying to put things in place to avoid that and say come on off the bed, let's get you on chair, that kind of thing, and think that how you deal with it, and looking at it as a whole and try to minimise....."

(Interview 5 England)

"I have told them many times..... That's what I do for my best practice, but they're not concerned to move out from the patient's bed.... That's it"

(Interview 6 England)

"Down here most parents respect the doctors and nurses like a higher professional when their children are admitted to the hospital....as soon as we told them in the right thing, the right way to do with their child, they will do it."

(Interview 4 Thailand)

In addition, I had seen Thai parents always paying respect to doctors and nurses by doing “Wai” when they meet everyday. “Wai” or “Sawasdee” is the verb for the common greeting that Thai people use to show respect to each other by raising both hands, and then joining the palms with the fingers pointing upwards and slightly bowed. Conversely, I only saw doctors in England greet parents with a handshake at the first meeting, while the nurse who is responsible for a patient greeting the parents by saying “Hi”, and introducing herself in the first meeting. Thai educated parents were more confident than non educated parents in questioning nurses and medical staff. However, the way in which Thai parents spoke to Thai staff seemed to be more respectful than English parents. Some kind of “politeness” had been observed during conversation between staff and parents, and the nurses can approach parents without helping from doctors when parents have any questions. Meanwhile, a doctor was available in the English hospital whenever parents had any questions.

In relation to life styles and family structure, a large number of visitors resulted in certain difficulties for IC practice during observation, such as the knowledge of hand hygiene. As I observed, in Thailand many people visit one patient in the general ward and they are also interested in other patients and other parents around the unit. The relationship among visitors and parents were built up very fast. Meanwhile, in native English families there are only one or two visitors per patient, which appeared to differ from patients who come from Asian families. They also greet other people but they keep some distance, while Thai visitors introduce themselves and build up the rapport between visitors extremely fast.

“Yeah, I think we do get a lot of families and it goes down the generations really, perhaps with Asian cultures, that’s one of the main cultures really that does that, but I can see how it would affect your practise and not just your infection control.”

(Interview 4 England)

“As you know, Thai people are very friendly, so they’re always interested in other patients, not only their child. So it is quite difficult to control. For example, they might ask the parents from the next bed to look after their child when they go to lunch because they are very friendly. I can say parents and visitors will get to know each other very fast after their child has been admitted. Regarding this issue, sometimes we have to remind them again and again if there is a risk of cross infection.”

(Interview 6 Thailand)

Regarding lifestyles and caring for a child, most parents in England always greet their child by hugging and kissing them, even if their child is very poorly and has been admitted to the ICU, while I did not see kissing in the Thai hospital. A little hugging was seen in general ward; I did not see any nurses in England remind parents about this issue. When I asked them, the main reason for non-compliance was being too busy.

“Actually we should remind them (laugh) but as you have seen....sometimes we’re very busy.”

(Interview 2 England)

“I think they are well enough....but if it happens in the ICU..... I really have no idea.

(Interview 1 England)

“I’ve never seen parents kiss their child when they come around...but some parents hug their child if they are not very poor in this ward [general ward].... maybe they’re scared that they can pass the germs to their child....and because we not kiss the child as usual as other countries.....so we haven’t got the problem with this issue”

(Interview 1 Thailand)

In addition, with regards to religion influencing IC practice, a plain wedding ring is allowed in England whilst it is not allowed in Thailand. The so-called “jibab”, a 3/4 length tunic with long sleeves and accompanying head scarf, were allowed in Muslim nurses in both England and Thailand.

“I saw some nurses come with long full dress with head scarf, I can see only her eyes...and also many parents who are Muslim in this hospital....but I have no idea about this, I just told them to clean their hands properly when they want to contact their child”.

(Interview 7 England)

“We allow Muslim nurses to wear a full dress with long sleeves and head scarf, but I rarely seen any Muslim nurses in this hospital wear it, just some area in the southern part of Thailand or in some Muslim nurses who are very strict.”

(Interview 10 Thailand)

4.4.2 Personal values, attitudes and beliefs

Attitudes, beliefs, and perceptions are aspects of the individual’s personality. There are various factors influencing these personalities including individual development such as biological organisms and cultural transmission. In this section, the presentation of personal values, attitudes and beliefs will be presented first. Cultures will be presented separately later in the country specifications section.

With infection control, everyone involved with paediatric care is important, including patient, parents and Healthcare staff. According to the natural development of children, as a child grows older, the more developed personal concepts become. Parents are a key person involved in paediatric nursing care. There are many similarities between Thai and English children. In this study, I will focus on the differences between the two groups of children, parents and healthcare staff. These will be presented respectively.

4.4.2.1 Parents’ attitudes, beliefs and values

In this study, it was clear that children in both England and Thailand are too young to take responsibility for their own health status and would rather play with toys and their friends. Their health status depends on parents and guardians. For example, I saw a 4-year-old patient lying on the floor and a nurse tried to move him to his bed, but he opposed her and remained lying down. Then the nurses asked his mother to encourage him to move back to his bed; the mother told the child once but he still did not move. Finally, the child was allowed to lie on the floor until he moved himself when a play specialist brought a video for him (Observation 5 England).

During observation, it can be clearly seen that parents' attitudes, beliefs and values are important to paediatric nursing care. If attitudes to healthcare service are positive, parents will follow the hand washing guidelines properly. For example, I saw the parents of a very poorly child admitted to ICU perform hand-washing properly, before and after contact with a child in the intensive care unit (Observation 8 England). A mother of a critical ill child in ICU bound her hair properly after she realised that it could transfer germs to her child (Observation 4 Thailand). Some parents look very happy to follow the hand hygiene guidelines and also appear pleased to help nurses looking after their child (Observation 7 and 8 England and Observation 1 and 2 Thailand). Whilst I attend the nurse setting pump, I saw one mother using a mask; when I asked a nurse the reason for this, she told me that because the parent had got flu and a runny nose, they asked to use a mask before entering the ward (Observation 2 England).

In contrast, I saw certain parents in a cubicle room sleeping with their child on the spare bed (Observation 4 and 6 England). Despite advice from a nurse informing the parents that sleeping with their child is not good, they did not move. A similar situation had happened in Thailand, but the Thai mother moved her child back to his bed suddenly after a nurse requested this (Observation 8 and 2 Thailand).

I was able to speak with some parents in both countries because they discussed my project with me. I had seen that some parents were considerably concerned about their child and were not impressed with the hospital service because of previous negative experiences with the health service. This was confirmed by the nurse who was responsible in that case. I saw that these parents always watched every episode of nursing and were ready to complain when they saw something unusual happen (Observation 1 and 10 England).

“...her son has a chronic disease and has been admitted here for 7 months, so she has been educated a lot of things happening with her son during admission.

.....she seems over concerned and ready to make a complaint if she didn't get support from anyone else.”

(Interview 1 England)

However, I had observed that Thai parents appeared to be less assertive in complaining to healthcare staff. It seems personal concepts are products related to culture and social structure which are different between Thailand and England, so it will be further apparent in the relationships between staff and parents and culture issue.

4.4.2.2 Healthcare staff's attitudes, beliefs and values

Healthcare staff, including nurses, doctors, healthcare assistants (HAs) and physiotherapists, are mainly in contact with the patients. Thus, an individual's behavior, working styles, and relationship between staff are important in IC practice. These will be presented in the following section.

“As I have seen, I think most protocols are not difficult to comply with but the most difficult to control are personal attitudes or personal behaviours. If someone has negative attitude towards IC protocols or is less concerned about it, it can increase the risk of infection.”

(Interview 2 Thailand)

“Yeah, exactly because people have different attitudes, different ways of dealing with them.”

(Interview 7 England)

In this study, there were no significant differences between implementation of IC protocols in Thailand and England as I had checked the IC guidelines from both countries. However, compliance and non-compliance guidelines were different in both countries.

In relation to hand hygiene guidelines, observations confirmed that nurses from both England and Thailand use similar standards. In both Thailand and England, two posters of hand cleaning techniques were provided one for hand rub and one for soap and water but there are differences in the time spent on

hand hygiene. For example, time spent using hand rub with alcohol is 20-30 seconds and time spent on hand-washing with soap and water is 40-60 seconds in England. Time spent in hand wash protocols and hand rubs in Thailand is the same but separated into three groups, 10 seconds for visitors who have contact with the patient, 20-30 seconds for non-invasive procedures and 2-3 minutes for invasive procedures.

Hand hygiene protocols were posted everywhere in the clinical setting in Thailand, especially over the washbasin to remind visitors and healthcare staff regarding hand washing step by step, while I only saw a simple hand washing poster over the sink in England to encourage visitors, and hand hygiene technique posters for staff in the staff room.

In addition, there are alcohol based gels hanging on the walls and over patients' beds in England, but these are limited in Thailand where they can only be found hung on patients' beds in the ICU; also, alcohol gel was limited in general wards, and was provided particularly in high risk cases in general wards. Plenty of paper towels are provided in England while these are limited in Thailand. Wards in Thailand mostly use re-usable towel made from cloth instead. This issue will be discussed later in the policy and resources topic.

From the observations, both Thailand and England experience similar difficulties for compliance in hand hygiene from healthcare staff, including hand washing techniques, lack of time, and forgetting. Regarding nurses, I rarely saw them follow the guidelines step by step, even though there is a hand hygiene poster over the washbasin in both Thailand and England. Not many nurses spend the allotted time hand washing, even nurses who had a good attitude in IC practice but lack of knowledge about IC. Only the 'link' nurses or nurses who have been trained in IC were undertaking the proper technique and proper length of time. Hands were washed with soap and water when they were visibly soiled or contaminated with dirt or organic material. Nurses prefer to use an alcohol-based handrub in between different patients, but I did not see many

nurses apply alcohol gel or wash their hands between different care activities for the same patient. In addition, I saw that hands were de-contaminated inconsistently due to differences in personal concern in both countries. For example, some nurses washed their hands both before and after every episode of nursing care, which some nurses failed to do. Additionally, hand washing compliance within individuals was not always consistent. In some activities nurses washed their hands both with water and alcohol gel before doing an invasive procedure, but some only applied alcohol gel.

However, hands were decontaminated more often with both water and alcohol hand rubs before invasive procedures. Only a few nurses paid particular attention to the tips of the fingers, the thumbs and the areas between the fingers. All watches were removed but wedding rings remained, particularly in England. In those who wore a ring, I did not see them pay attention to removing it and cleaning under it. Fingernails were not kept short by most nurses in both countries.

After observation, I asked nurses about those situations where nurses in both Thailand and England did not follow hand hygiene guidelines properly. Some failed to comply in every aspect of nursing, some complied inconsistently, and some complied but did not use the proper techniques. As presented previously regarding inconsistency, some non-compliance was due to personal attitudes, beliefs and responsibilities. These are some samples obtained from the interviews:

“There’s a list of reasons why people don’t wash their hands: soap’s no good, water is too hot, water is too cold, the towels are no good, the towels are too rough, the towels are too soft. So then you put all that together and you try to not make the water too hot, it’s a nice soap you know. Hand cream is provided so that people who have washed their hands can put hand cream on. Because obviously people say well it cracks my hands. Put a little bit of hand cream on you know, you’re always looking for something to encourage them to wash their hands but if you’ve got something that hurts or got cracked skin well you’ve got some cream. And the things we looked at make sure the water is not too hot and that the mixed taps a set. Don’t burn you when you put them under there, but little things like that.”

(Interview 1 England)

*"It's really uncomfortable, I don't mind doing it but I can't do it in too long shifts. I'd do it tonight and tomorrow and then I'll make sure I have a rest because otherwise I'll feel sick. If you are assigned you cannot get out from there.....
.....Erm I think this one is stricter because... this you have to wear masks and in others you just have to wear gloves and swine flu is quite complicated and you have to wear everything. Like aprons, gloves and a very special mask, which is very tight so quite tough really....."*

(Interview 7 England)

"..... in practice we only need to complete all processes of the protocol, so we just do it without following the step by step protocol. I think it is enough for cleaning our hands. So when they come to check us, we cannot remember how to follow the protocol correctly." (Laughing).....I see they do but I didn't observe closely but I think they just wash their hands whenever they want to protect themselves from excretion and secretion, and it is also different in each person. It depends on self awareness.....sometimes I don't do that. I will balance some practices. I mean if I haven't had contact with blood, secretion or waste products, sometimes I forget to clean my hands after practice."

(Interview 1 Thailand)

"I think 30 seconds is more suitable with nursing practice than 2-3 minutes but for some activities we cannot take more time like that, so my view is I think 10-15 seconds is ok. However, if we have to do invasive procedures, 2-3 minutes is too long as well. This should be used for the theatre room."

(Interview 3 Thailand)

In other healthcare staff, I rarely saw healthcare assistants (HAs) washing their hands before they had contact with patients. When doctors came round, only one or two doctors washed their hands before they had contact with patients, but some others did not clean their hands even using alcohol gel; they also have the same issue of non-compliance with hand hygiene as nurses. This issue was also confirmed by nurses who work every day with doctors, as follows:

"Doctors are a big problem, they'll come along do their ward round I have to say more so now the junior doctors and the senior doctors will walk around and do the ward round-we have to do-stop them by telling them to put gloves on, or to wash your hands and that and that's what we've had to do, and we do, do it."

(Interview 9 England)

".....It depends on the doctors. I mean some doctors will do but some I've rarely seen. One more thing I've ever done. I used to remind them when they used one stethoscope for all patients in the bay (LAUGH) because my head of ward asked me to."

(Interview 7 Thailand)

Obviously the major reasons for non-compliance above were associated to personal behaviours, beliefs and attitudes. There are some recommendations for hand hygiene protocols from nurses regarding the balance between protocols and practical situations, as follows:

"I think sometimes we should balance what time we can use alcohol and what time we must wash our hands with soap and water. For me, if I get dirt from secretion or blood, I will wash my hands with water and soap. I will only use alcohol in low infection risk procedures such as doing TPR, feeding or bathing patients. Sometimes I use alcohol gel between contact with different patients as well when I'm in a hurry to do nursing practice, and sometimes I forget to clean my hands as well when I have to do something urgently. Anyway if I have more time I try to remind myself if I can." (Laugh)

(Interview 3 Thailand)

There are additional difficulties seen from observation and interviewing regarding invasive procedures and other IC practice guidelines. For example, during suctioning, the nurse is the physiotherapist's assistant and wears a plastic apron and gloves, but in England neither the physiotherapist nor the nurse use masks during suctioning, while nurses in Thailand preferred to use a mask. Gloves were worn inconsistently due to differences in personal responsibility in both countries. However, when I asked nurses during the interview, they all, from both countries, gave me the standard practices and told me that they forgot to comply with the guidelines or had no more time to comply with the guidelines properly. This is different to what I have seen during observation; for example, nurses had a plenty of time to wash their hands whilst I was observing. Other reasons for non-compliance with using protective equipment were given by other nurses:

"We hate them [mask].....well I mean if you've got a ventilated patient as well then they've pretty much got a closed circuit as well haven't they, they are on the ventilator so they are on a closed circuit. Even when we have a child, let's say they have a RSV virus and they are positive we wouldn't necessarily put them in the cubicle in intensive care because they are on a ventilator and all their ventilation is on a closed filtered circuit so... but I mean you know if they accidentally spluttered on you then... but you know as long as you've got good hand hygiene and you are wearing an apron then you're not exposing that child to any bugs you picked up from any surfaces and that and if the child is in the unit it's not going to make any difference as to whether the child next to them is breathing, if that makes sense, if the other child has got an infection next door

to them they're breathing so it's not going to make any difference if we wear a mask, because if they are breathing out into the air and it's transferred in particles then they are going to catch it from that way anyway, but most of the illnesses and chest infections aren't actually transferred in particles anyway. You'll find that they are transferred on surfaces and things like that, so hand hygiene should be acquitted I feel, but it's not general practise of using masks with all patients.....and again like I say if you have a child with a ventilated circuit then they shouldn't be catching things from you anyway if you are using good hand hygiene and if you have got an immuno- compromised child, or your child is an oncology patient or something like that – and infectious patients are put in a cubicle, and you have got somebody who is in and they are a little bit under the weather with a cough and cold then you tend not to put them in with the child. From experience that's just what I've picked up but it's not policy or anything, it's just common sense I think.”

(Interview 8 England)

“I know they [gloves] can protect me from blood, but sometimes I feel they do not fit my hands and it makes me feel less confident about inserting a cannula into the patient if I wear gloves. Anyway when I've got a wound, I will use them to protect myself, or if I have to work with an infectious patient I will use gloves.”

(Interview 7 Thailand)

4.4.3 Nursing roles and relationships

4.4.3.1 Roles of nurses and healthcare staff

Nurses are key staff who frequently contact patients in healthcare services. As observed, the roles and duties of nurses in Thailand and England were not significantly different in the basic duties. This is because fundamental duties were required based upon the nursing license in both countries. There are fundamental requirements of what nurses must do and should do. For example, regarding IC practice, when nurses notice something wrong or irregular, they should notify or intervene. It is important that the nurse educates all staff who have contact with the patient and reminds them when they are not complying with the guidelines. However, there are differences between the information I obtained from the interview and what I observed. For example, the majority of participants in both countries told me that if they see incorrect IC practice, they will remind them straight away, but when I was observing I rarely saw any nurses remind any doctors or colleagues, but they did remind visitors.

“..... if I was looking after my patients and my Sister came over and started doing something and didn't gown up I would tell them like I would tell the doctors, “put your gowns on before you touch my patient”, and on this unit I have to say that I never had to say that to a member of staff on here but if you ever had to say that they wouldn't have a problem with you saying that to them at the end of the day, because we all see from the same point of view we all want the same outcome, that wouldn't be a problem, but the doctors get a bit moody but that's an ego thing.”

(Interview 9 England)

Different duties were undertaken by the nurses in Thailand. For example, in Thailand, nurses insert cannulae except for the central venous cannulae and prepare total parenteral nutrition (TPN) which they are trained to do. In England, these tasks were undertaken by specialist staff.

“Previously, it was done by a pharmacist in the pharmacy department during the working day but on the night shift or weekend, nurses are trained to do that. Even now, I don't know why we have to do both working days too. Probably they think we can do it and we haven't complained to them, or they are busy as well. I have no idea about this because I am junior. Even though we are very busy because we are at full capacity with patients, we have to let one nurse prepare it every day.”

(Interview 7 Thailand)

Nurses in Thailand also suction patients by themselves while the physiotherapist does this activity in England. There are some differences regarding practice about respirator maintenance. For example, in England the respirator circuit was changed by the technician whilst in Thailand it was done by the nurses.

In England, there is a toy specialist working in the unit in order to provide recreation and play for patients who are not poorly, while nurses have to run this scheme in Thailand. Nurses in the Thai hospital on a day shift undertook recreational activities for children in the general ward every day.

Nurses who work in the ICU have a greater risk of introducing infections to their patients as there are more invasive procedures than in general wards. These

invasive procedures include: feeding TPN, dripping medicine via central lines and checking arterial blood gas. Alcohol gel was used more often in the ICU.

“In intensive care.....if it’s an emergency you can’t run to the sink and wash your hands and come back to your patient and alcohol gel your hands and put an apron on then put your gloves on you can’t do that because your patient might be in the pit of the big black hole by then. So that little group of like gowning up and decontaminating before seeing to the patient is probably the one area we can lack in on here if it’s an emergency where as if it’s in a general children’s ward I would say there is no excuse really.”

(Interview 9 England)

“Sometimes I forget because I have something to do. For example, I do suction, and then I take off my gloves and jot down in the patient’s file without washing my hands with water before writing. I remember when I see some powder on the patient’s file.....LAUGH...”

(Interview 2 Thailand)

In addition, in terms of the university hospitals in both countries, I saw many medical students and student nurses practicing on both day and night shifts, which can make the wards hectic when they come around in the same period. Most paediatric nurses in Thailand have to mentor and supervise student nurses, and their only training for this is reading the manual on how to be a mentor (without going on a course). There are many student nurses from three different colleges in the clinical setting in Thailand whilst I was observing. One nurse was assigned to supervise three or four student nurses. Nursing rounds and nursing conferences with student nurses were done every shift. Meanwhile, nurses who are mentors in England have to be trained and attend an extra course.

“I don’t get paid extra for it [mentor]. Obviously the hospital pays for me to do the training, so I don’t have to pay to do it myself. But yes I think it’s 15 credits for doing the module. When I am qualified, I am qualified with a diploma certificate, so I have not actually got a degree as of yet, so my continuing training will be to do different modules, and then build up my credits to degree level.”

(Interview 8 England)

“.....and we have to discuss the nursing care plan with them during the nursing round every morning before starting nursing care. So I think there are student nurses here. It is good for encouraging ourselves as well.....and of course we don't get any extra pay for this role”

(Interview 1 Thailand)

Furthermore, the ICT in Thailand is mostly run by nurses, and there are few doctors involved; similarly, in England the ICT is staffed by nurses. Clinical microbiologists work separately from the IC team but they liaise at several forums within the hospital. There are two to three ICNs in tertiary hospitals in both Thailand and England, depending on bed capacity. In Thailand, the head of the IC committee is a doctor while nurses and doctors in England have their own separate IC team (ICT).

“....but we have a completely separate control team, if you phone them they will come. And they will take over and say right this is what you need to do, bla bla bla bla bla...”

(Interview 1 England)

“There are three ICNs and fifty-five ICWNs but there are only nurses involved. I don't know why other healthcare staff do not get involved. I think this problem is a big issue and we should find a solution together.”

(Interview 10 Thailand)

There are slight differences between the role of ICN in Thailand and England. In Thailand, the roles of ICNs are IC auditors, investigating HCAs and giving information for other staff. Nurses in Thailand are audited by ICNs. In England, hand hygiene techniques were audited by link nurses, and ICNs are responsible for investigating HCAs and giving information for other staff. Meetings between ICNs and link nurses are arranged once a month in Thailand and every couple of months in England.

“..... We also do audits on hand washing, there's also the infection control link nurse, they're supposed to do audits where they're watching people making sure that they wash their hands, making sure that they wear their aprons or appropriate clothing.”

(Interview 3 England)

“Uhm... Yes, the IC unit here is quite strict about hand washing. Sometimes the ICN will come round the wards without telling us beforehand and ask nurses or

other caregivers, such as nurse aids, to demonstrate hand washing by random sampling. There are some problems. (Laughing) We can do all processes of hand washing but we rarely find that anyone follows all the steps correctly."

(Interview 1 Thailand)

"The IC team will come to observe us every three to six months... they will ask us show how we wash our hands at random, and test with the fluorescent light....we don't know beforehand when they will come round....it's my unlucky day....(laugh) I did the proper technique... the IC team said... but they saw some soap left under my elbow (laugh) the last time they came, they asked me to do it again.... And yeah I did it."

(Interview 4 Thailand)

There are one to two Infection Control Ward Nurses (ICWNs) or link nurses in every ward in the hospital in both countries. In Thailand, certain nurses were appointed to be a link nurses whilst working as a paediatric nurse at the same time. In some wards, nurses have to take part in this role by rotation. Thai nurses are also trained to be hygiene nurses, who are responsible for ward environment. The roles of ICWN, in Thailand, are co-ordinators between ICN and nurses, updating information about HCAI and IC practices, and monitoring HCAIs in wards.

"We have an infection control link nurse on the ward and she tends to go to the infection control meetings. Just to see if there's any change in policy or any updates we should know about as practitioners. And then our infection control specialist nurses are the ones that would come out, if we were to report like the incident we had a few months ago, we had suspected neutral virus. We had staff off sick, we had patients and parents going down with this bug. Our ward was closed and we had a visit every day from the infection control specialist nurses just to see how everything was going, so that's how infection control nurses work."

(Interview 6 England)

"Some people like a healthcare assistant were involved to take part as surveillance here...I'm not sure that they were trained by special course or they're just only informed by ICN".

(Interview 7 England)

"There are one or two nurses appointed to be ICWN [Infection Control Ward Nurse] in this ward, and they were undertaken special course about IC practice and HCAI investigation because they have to take part as surveillance."

(Interview 2 Thailand)

Link nurses or ICWNs are specially trained by experts before getting involved. As mentioned above, link nurses in England are responsible for hand washing audit. In doing nursing audit, nurses who act as link nurses are required to take an advanced course in IC auditing. They inspect and audit other nurses in the clinical setting.

“.....we all work just as hard, regardless of our qualification with regards to infection control definitely, I mean... we have a couple of named nurses for infection control and it's their responsibility if you like - they're the lead for making sure things are carried out and done properly and they inspect everything.....and do audits to make sure people are doing everything properly.....”

(Interview 9 England)

However, if staff have any problems, ICNs will be available all the time both in England and Thailand.

“.....and if you have any concern or any worries then you phone them up, they're very good, and they will answer any concern..., and if they don't know they will get in touch with the infection control doctor to find out from him and then they will phone you back and let you know. And they are very good.”

(Interview 1 England)

“..... if my patient's lab comes out and absolutely shows infection, I will report it to the in-charge nurse, then the in-charge nurse will confirm with the doctor to ensure that it is NI. When the doctor confirms it meets the NI criterion, the in-charge nurse will report to the ICWN, then the ICWN will discuss it with our staff in the conference hour as we do every day after doing handover, and then the ICWN will report to the ICN team later on by using the NI report form.”

(Interview 4 Thailand)

In the study, I observed that there were some difficulties regarding recording HCAI cases in Thailand. For example, if a patient was suspected of HCAI, the nurse who was assigned to that case notified the ICWNs and then the ICWNs notified the doctors to diagnose. When cases are diagnosed as HCAI, they are sent to the ICT to investigate in the unit. Most of the HCAI diagnoses depend on the doctors, so some cases were recorded and some cases were not, even though they meet the HCAI criteria. Meanwhile, the nurses in England reported

HCAI case by filling the online form promptly when the patients were diagnosed HCAI.

".. Yeah, when the lab is completely shown that this case got infection, the doctor confirms, then I can fill the form online directly...and it will go through the ICN."

(Interview 10 England)

".....On the other hand, if doctors do not confirm that it is NI, we just observe them until they show up more criterion of NI and notify the doctor again because down here even we think it has the signs of NI but if the doctor doesn't suspect NI, we cannot record it as an NI case."

(Interview 2 Thailand)

Regarding the nurse to patient ratio, in England, one nurse was assigned to between four and six patients in general wards, but one nurse looked after only one patient in the ICU. There were four to six nurses on the shift excluding the in-charge nurse and ward sister in the general wards. If several patients are admitted they will arrange for another nurse to be transferred from another ward or part-time nurses. In Thailand, there were four nurses, excluding the head of ward, in the day shift and three nurses in the night shift in the general wards. One nurse in Thailand has to respond to between four and eight patients in the day shift, and ten to fifteen patients in the night shift in the general wards. One nurse in the ICU has to respond to more than one case, except patients who are very poorly or have MRSA who are attended by one nurse.

"We work hard and are always busy as you've seen, but when we have full capacity of patients, we can call part-time nurses to help.....there are a lot of part-time nurses from healthcare agency."

(Interview 2 England)

"...I got £1,520 per month when I first start working here...as soon as you got a higher Band, the wage is increased"

(Interview 10 England)

".....down here nurses work quite hard. We haven't got one nurse to one patient the same as developed countries, except patients with MRSA or infectious diseases will be taken care of by one nurse."

(Interview 10 Thailand)

“When I started working here as a newly qualified nurse, I got 12000 baht (£250) per month, but I have to do everything including an in-charge nurse after I worked 6 months in this ward.”

(Interview 7 Thailand)

The load of duties has an impact as I observed in this study, including a lack of time to complete protocols, as discussed previously. In addition, many nurses resign and new nurses arrive every year.

“Two or three nurses quit every year because of the workload here, and we get new RNs every year as well.... it’s quite hard to solve this problem, and you know we have to train the new trainees, and when they are as good as we want, then they quit because they get a better job in a private hospital and also get a better salary.....however, if there are good support from the hospital such as funding to study advance nursing or good teamwork, it could decrease the rate of turnover..... For example, if any healthcare staff consistently perform good hand hygiene, he or she will be voted from colleagues, and was announced on the IC board. Moreover, if any wards can decrease the rate of HCAI, that ward will be announced on the IC board as well”.

(Interview 10 Thailand)

4.4.3.2 Working styles, relationship and teamwork of Healthcare staff

This section refers to the structure of healthcare which might affect HCAs. This section also relates to culture, and other relevant factors involved such as social structure.

According to the literature, HCAs are everyone’s business (Perry 2007). Thus, teamwork is important in reducing HCAs in the healthcare setting. During observation, I noted some differences regarding working style and hierarchy between the two countries. Relationships between nurses and relationships between nurses and other staff in England look more formal than in Thailand. These include the way staff discuss and talk. As observed, Thai staff had a daily conference together, and they appear to have close relationship because they can tell me in-depth details about their colleagues. The English nurses did not do this. In Thailand, the ward manager or head nurse worked closely with other

staff, including a nursing conference before starting a shift, whilst I had not seen this in England. Light hearted informal chat or banter between staff were observed more frequently in the Thai hospital than in the English hospital.

In addition, nurses in the English hospital appear to work more independently than in Thailand. For example, after hand over, patients were assigned to nurses by the in-charge nurse. One nurse looked after four to six patients in the general wards or one patient in the ICU. Then the nurses were informed individually of the patients' situation again in depth by the night shift nurse. The nurses looked after only those patients over the whole shift. I saw that one patient had a problem and her mother needed the nurse to help, but they could not find the nurse who was looking after her at that time, so they waited until the nurse who was assigned to that case appeared. Meanwhile, nurses in Thailand have to know all the patients in the ward after hand over; they were informed about the problems of all patients in that shift though they were assigned to look after 6-8 patients, depending on the shift. However, if patients and parents need any help, any nurse or Healthcare staff will respond straight away.

In Thailand, HAs or nurse aids (NAs) are more involved in patient care than in England due to the limited number of nurses and the patient load. As I saw, most nurses in England work separately with staff both in general wards and in the ICU. I rarely saw the nurses speak with the HAs during observation, even when they were having a coffee break in the same room. Most of the conversations that they had were in relation to the patients' problems. Meanwhile, HAs work as nurses' partners in Thailand, and I saw that they had banter with each other during the intervention. The HAs also joined a conference with the nurses every day before they started working.

There are in-charge nurses working during the shift in both countries, but they work differently. In-charge nurses in England work as a supervisor for nurses who have difficulties, such as dealing with parents or doctors, and did not accompany doctors on ward rounds. Assigned nurses communicate with

doctors and parents individually when doctors want to know any information. Meanwhile, in-charge nurses in Thailand have to deal and communicate with doctors for all the patients on their ward. These nurses accompany doctors whilst they visit patients, and if there are new interventions or treatments, the in-charge nurse will tell the nurse assigned to that case to carry them out immediately. In England, in-charge nurses are senior nurses or deputy nurses who are higher than band 5, and are trained and meet the requirements of an in-charge position, whilst nurses in Thailand can be in-charge nurses when they have worked for more than 6 months. Thai nurses are initially trained to be in-charge nurses during the night shift.

“If you want to be an in-charge nurse, you have to be band 6 and qualified...when you meet the criteria, then the ward sister will check you.....”

(Interview 7 England)

“The in-charge nurse here is not a senior nurse. Everyone who is a registered nurse can do this job, and they have to practise how to organise everything when they become an in-charge nurse..... For example they have to deal with doctors and another person outside the unit, and also they have to know everything happening on the ward during the day or night shift. If anything goes wrong, the nurses who work with the patient will report it to an in-charge nurse and then the in-charge nurse will notify the doctor or related person later on.”

(Interview 1 Thailand)

In terms of relationships between nurses and doctors, nurses in England appeared to be more assertive than Thai nurses when in discussion with doctors; this depended on nursing experience as well. Senior nurses appear to have more confidence in reminding doctors than junior nurses. However, I still saw that some nurses did not remind doctors of procedure when they visited and investigated patients in both countries, even though they were experienced nurses. In a Thai hospital, when doctors visit patients, at least one nurse accompanies them, whilst I have not seen nurses accompany doctors on their rounds in the English hospital. I saw more formality between Thai doctors and nurses, particularly junior nurses, than with English doctors and nurses. For example, if a Thai nurse got a wrong prescription from a doctor; they asked a

senior nurse or the in-charge nurses to remind the doctor instead; they communicate directly with the doctors only when they are assigned to by the in-charge nurse.

However, the information obtained from the interviewees was different from what I saw during observation.

"...The other day 12 [doctor] came into one of the cubicles that was infected and I made them all wash their hands, all put aprons on, all put gloves on, and then they stood in the room like that...with their gloves and aprons on.....So it doesn't matter whether you work in a hospital in this country or whatever country, everyone's in the same boat. It's just difficult and it puts you in a difficult place sometimes. And like you say if you haven't got the experience to stand up to parents or to the doctors or to your colleagues it can put you in a very awkward place but it's about having the confidence to say STOP [Stressed] wash your hands. But you know that will come, as the next students come through... I mean infection control is taught at university now. So you know it is even being recognised that, yes, there is a place for infection control within the training, which is good."

(Interview 1 England)

"... (LAUGH) I can say, it depends on the doctors and how severity the procedure is. I mean some doctor we can remind but some doctors are very confident. You know what I mean."

(Interview 3 Thailand)

4.4.3.3 Relationship between patients, parents and healthcare staff

As can be seen in both countries children think only about their standard needs such as food, love, safety and fun. They will follow treatment when they are satisfied or when they know that it is not painful. Good and bad moods can result in substantial compliance or bad compliance as a result, depending on how nurses and parents negotiate with children. The communication between nurses and children is important. If nurses cannot deal with the child, parents or guardians are the key person to deal with them. This is why paediatric nurses must know about the nature of children because sometimes when children are unsatisfied with nurses or treatment, they are very difficult to control.

In this study, most paediatric nurses, both Thai and English nurses, had a sense of humour and good communication with children. They build a rapport with the patients during interventions, for example “This is the magic cream, I will put it on your hands and it will make you numb after one hour” (Observation 1 England). Some children are very young and do not understand what the nurses say, but the nurses always talk with them while they are doing the intervention in order to promote emotional development. There are slight differences regarding the way nurses address paediatric patients in Thailand and England. For example, nurses in England call patients “my love”, “my dear”, and “sweetheart” while nurses in Thailand call patients “my son” or “my daughter”.

“.....We want to make them feel like we are their relatives not a stranger, so we prefer to call them that.....Moreover, children need attachment and bonding, so we need to touch them to promote psychological support, so nurses, parents or guardians need to be more responsible about hand hygiene in order to look after children.”

(Interview 3 Thailand)

Nurses have good communication and are friendly with the parents. As I saw, most parents help to control and encourage their child to follow treatment. In paediatric nursing, parents and guardians are involved in caring, known as family centred care, because most children respect their parents more than staff. For example, I saw a nurse try to persuade a patient to take a pill, but the patient did not want to take it; the patient finally took the pill with help from the mother. Most nurses should build up a good relationship with parents too.

“...So if you can get them on your side you're ¾ of the way there, if you can get mums and dads on board with you then you're laughing, and you're then ¾ of the way there because they will do anything they're told. And if dad says wash your hands when bla bla bla... then they will wash they're hands. So yes having the parents on board is a good thing. But if you're fighting and arguing with the parents then you might as well forget it because it's not going to happen, so you need to keep the parents sweet.”

(Interview 1 England)

“I'll educate parents or visitors who come around children because they get closer to the children than the nurses do, so if they see anything wrong they should report it to the nurse immediately.... We emphasize family centre and

children centre care, so parents and visitors stay with the child all the time. For example if they see any discharge from the child's wound such as a ruptured appendicitis' wound, they should report it to us as soon as possible."

(Interview 1 Thailand)

However, negotiations between nurses and parents or parents and their child from both countries are slightly different. As I saw, children in Thailand appear to be more respectful to nurses than children in England; when a nurse told a child to do something he or she followed the nurse's request easier than in England. For example, a 12-year old English patient refused to take his medicine. When a nurse noticed this, she told him to take it while she was in his room, but he refused (Observation 5 England). A 9-year English patient sat on another patient's bed, and when a nurse told him to move back to his own bed, he did not move until his parents told him to (Observation 6 England). Meanwhile, I saw an opposite situation in Thailand: when a nurse told a patient to move back to his bed, he moved straight away. This may be due to culture and lifestyle, and will be discussed in the parents and visitors topic later.

In addition, even though both Thai and English nurses attempted to build up rapport with parents, as briefly presented in page 192, I observed that parents in England appeared to be more assertive in asking questions and also making a complaint than Thai parents. English parents appear to be more respectful towards doctors than towards nurses, while Thai parents respect both doctors and nurses as professionals.

"If we are having issues with the parents and they maybe being let's say received verbally abusive or you know not very pleasant or stopping us from doing our job then there's myself and I would try to deal with it first but if I can't deal with it then I'd asked the sister in charge so the nurse in charge of the shift to come over and to probably speak with the parents. If that still wasn't enough then doctors could obviously try and speak with the parents as well because a lot of the times the doctor are God compare to us you know we are just the doctor's slave, we don't know anything but the doctors know everything so sometimes it only take the doctor I think.....Sometimes yes, like they still I think a lot of the family holds the doctor in a higher position to nurses, of course sometimes it take the doctor to repeat what you already said, but it's come from the doctor so that fine if that's not the case then we got people like

modern matron and people like that, who deals with complaints but usually it can be sorted without going to those lengths.”

(Interview 8 England)

“Down here, parents respect doctor as a God, and also respect nurses as a sub- God (Laugh).....we haven't got much complaint from parents.....few of them [complaint] was happened because there're misunderstanding, so after we explained to those parents, they apologized us for their complaint.....For me, I think everything will be fine if we explain what we have to do and what we have done for their child, and we have to make sure that they clearly understand”

(Interview 10 Thailand)

4.4.4 Education

I have observed that education is an important factor influencing IC practices within this study. This also impacts on all clients, including patients and parents and healthcare staff. This will be presented here in turn.

4.4.4.1 Patients' education

As previously discussed, in paediatric wards both in Thailand and England, most parents take responsibility for their child. However, this is due to the patient's education. During observation, I had seen that when a nurse wanted a child to do anything, such as take an oral medicine, the parents are asked to assist, (Observation 1 England). This is because very young children do not fully understand what the nurse has told them to do. However, in older children, the child can better understand, thus nurses communicate with the child directly (Observation 5 and 6 England and Observation 1Thailand). Lack of awareness of IC practices was observed in very young children in both countries.

4.4.4.2 Parents' education and awareness of IC practice

In this study, levels of parents' education impacted on both responsibility demonstrated towards the child, and some difficulties regarding IC in both countries. With regard to this issue, information obtained by interviewing the

participants, parents with higher levels of education or are well educated, are more compliant with hand hygiene than uneducated parents. Some difficulties occurred if parents were uneducated or un-informed compared to parents who have higher levels of education. This includes all information that parents are given at the hospital. For example, a Thai parent was not informed about wearing a cap or binding her hair before access to the intensive care unit (Observation 4 Thailand), however, when nurses informed her about the risks of this, the mother bound her hair properly.

It may be observed that parents in England have better opportunity to access advanced technology and media than Thai parents.

“I think that’s the quite interesting thing to say as well because here people are very well educated, most people are very well educated they’ve gone through school especially to GCSE at 16 and other levels so people are very well educated and they do know a lot more about things so... that makes them more aware of things as well, I think they do think of us in a higher...”

(Interview 2 England)

“Down here parents respect doctors and nurses as a God when their child was admitted to the hospital....parents do not know too much about disease and also lack of awareness not many parents obtain higher education and are not good in using internet either, so they always respect everything nurses do with their child but if anything wrong, it can make the trouble to nurses as well.”

(Interview 9 Thailand)

In addition, parents are most concerned about infection risks to their children when compare with than other relatives. In observation, parents paid more attention to washing their hands than other visitors did.

“Parents are not so bad, they understand obviously about hand washing and using the alcohol gels and things like that, but visitors are terrible, because they just walk in and they walk off and touch everything and anything. Don’t wash their hands, don’t use the alcohol gel.”

(Interview 6 England)

“From my experience, most patients’ families that I meet here are the nuclear family. However, I think they definitely are different in education. Thus it is quite

difficult to explain or give health information to guardians or care givers who have different levels of education.”

(Interview 10 Thailand)

Education level of parents also related to country specification as there are slight differences between Thailand and England in terms of public welfare, which will be presented further later in the topic.

4.4.4.3 Nurses' education

Education in staff can be separated into child nursing education and IC practice education. As demonstrated in this study, a lack of knowledge of both subjects can result in poor practice. This section will present the fundamental knowledge regarding child nursing care, and further education or training will be described later.

Knowledge of caring is the basis of nursing care that all nurses must be trained in. According to literature and the interviews, there is some difference in the nursing curriculum between England and Thailand. For example, the nursing course in England has a three year curriculum and provides specialist training such as adult nursing, midwifery or paediatric nursing, whilst the nursing course in Thailand has a four year curriculum and nurses become qualified as both registered nurses (RNs) and midwives, and then undertake additional qualification in paediatric nursing.

“..... in the first year of training at university we had - we trained with all the cohorts so like mental health, adults, midwifery and children. And we had like general AP and all of the basic stuff and then after your first year of training... you then went into your speciality - so obviously mine was children. And I did 2 years of specialist training in paediatric nursing”.

(Interview 8 England)

“I learned about the fundamentals and basics of nursing when I was a first year student. These include standards of hygiene. Then we started learning many subjects such as paediatric nursing, midwifery, adult nursing, aging, community nursing from easy to difficult both in the classroom and practice in the clinic

from year two to year three. All critical care, law of nursing and nursing management was taught in the last year."

(Interview 6 Thailand)

When nurses are qualified, they rotate in different areas, including medical, surgical and high dependency areas, in both countries.

"Yes, so you build up your skills and different areas so you've got your medical, surgical and high dependence. It did change slightly where they shortened the rotational program to twelve months. I don't know if they are reintroducing it for three rotational programs again. It was only for two wards so I don't know if they are going back to three wards again, but I did three wards."

(Interview 4 England)

"I did 6 months rotation in medical, surgical and emergency wards, and then I came straight to this unit because I applied to work in this unit.... I mean all new GNs can choose which wards they want to work in and it depends on whether those wards are available... and I'm lucky that this unit was my first choice."

(Interview 2 Thailand)

Regarding the knowledge of IC practices, in both countries, newly registered and all nurses were trained for 2-3 days regarding IC and standard protocols before starting work. In Thailand all newly qualified healthcare staff except doctors take part in annual IC update training whilst in England only nurses undertake this course.

"We have managed our training day with our infection control policy on it, but we don't have a long course....., for specifics long days we just focus on infection control..."

(Interview 9 England)

"We have infection control training quite often, at least 2-3 times a year for new staff, old staff and also ICWNs update us about infection control. Anyway, the ICWNs will update or inform their staff as well if there is some news about infection control or new infectious disease when we have our daily conference every morning."

(Interview 2 Thailand)

Paediatric nurses should know about child development and health status in order to assess and provide individualized care. Certain problems are more complicated than with adults. Lack of this knowledge may contribute different IC

practices as a result. As demonstrated in the study there are some differences in IC practices, including isolation of children, play and toy management between Thailand and England. In addition, the nurses in Thailand appeared to answer and told the further details regarding patient's health status, patient's vaccination and children development than the nurses in England. This issue will be presented in the following section.

Patients' health status, in this study, affects isolation policy in Thailand and England differently. Each patient responds to infection differently depending on various factors, both direct and indirect. Direct factors include the patient's own problem such as congenital disease, the patient's own immunity, immunosuppression, and underlying disease. Indirect factors include patient's lifestyle and child's nurture. These factors are described separately, as follows.

In relation to patient's immunity, most children, particularly infants, require vaccination in order to promote a healthy immune system when they are young. Thailand and England have similar protocols. For example, standard vaccines are provided, and immunisation is done in the same way in the two countries, but there are some differences between England and Thailand. In order to assess the patients' problem and health status, the nurses in Thailand have to ask about the patient's vaccination status. The nurses in England told me that they were not responsible for the vaccination, and they were not sure about this issue. However, infant patients who had not completed their vaccination programmes were put into isolated rooms in England, whilst they were put into the normal bay in Thai hospitals, but were separated from children of other ages.

".....We have to check that the child has missed any vaccine when they're first admitted, particularly in infants and toddlers.....Most patients who are at risk of infection are very young and have low immunity...when they have an operation such as open heart and pull-through intestine or bowel...they can get an infection easier than older children. As you've seen the rate of NI here is quite high if you compare it with normal wards."

(Interview 7 Thailand)

Differences in underlying disease status affect children's outcomes. Moreover,

the more invasive procedures children undergo, the more they are at risk of infection. As could be seen from observation, children admitted to intensive care had undergone more invasive procedures and longer length of stay than children admitted to the general wards, because they required invasive treatments such as double or triple lumen catheterization, suctioning, endotracheal tube and respirator insertion.

“As you know.... this ward is an intensive care unit, so there are such a lot of invasive treatments after operations or after admission. One patient has to handle double or triple lumen while using the respirator... so it is quite serious and there is a risk of infection every minute.....due to all invasive treatments and nursing such as suction, injection and dressing wounds because these interventions are frequently done every 30 minutes or in some cases we mostly do suction every 15 minutes.”

(Interview 10 Thailand)

Regarding treatment, children in both Thailand and England have the same problems, and were treated similarly; this also relates to invasive treatments that are used to treat these patients, particularly patients in the intensive care unit (ICU). In the study, a longer stay can also affect risk of HCAs. This can be seen from the interviews, as follows:

“No, we don’t actually probably get [HCAI] 1 a month if that; it tends to be long-term patients, who have been in hospital for months or years or come into hospital regularly.....”

(Interview 8 England)

“.....it is very hard to prevent infection because patients who stay here are long term patients and they also need to use ventilators for a long time. I mean they are admitted when they only weigh 1000-1500 grams, so they need to stay here until they can breathe on their own.....Most patient will be admitted for at least 2-3 weeks, so the longer they are supported by the ventilator, the more they are at risk of VAP.”

(Interview 7 Thailand)

In terms of immunosuppression, it is a response reducing the activation of the immune system. Immunosuppression may take place as an adverse reaction to treatment for other conditions. Patients who have immunosuppression, or whose immune system is ineffective due to tissue transplant, chemotherapy,

HIV, or Lupus were separated to safe places such as a cubicle or separate room in order to avoid frequent contact with others because they are susceptible to germs from other patients.

“...as they are treated with steroid drugs, it makes them very poorly with low resistance.....as you know, these patients easily get an infection from other patients, so we put them into a cubicle room to decrease contact transmission....., we also post the hygiene protocol, inform parents and all staff... to be aware of those cases the same as infectious patients.”

(Interview 9 Thailand)

According to patient’s health status described above, these influences highlight similarities and differences in IC practices between England and Thailand, including the isolation policy. The criterion for cubicle rooms were immunosuppression, infectious diseases and children who were at risk due to low resistance, such as newborns and infants.

“Diarrhoea and vomiting, meningitis and tonsillitis and sepsis all that kind of stuff....and...Lower risk of infection you know like the C. dif.....”

(Interview 2 England)

“ A patient who is a high risk of air bound transmission and infectious diseases such as rubella, measles, chicken pox, and low resistance patients.”

(Interview 9 Thailand)

However, the criteria of separation are similar due to the same standards of isolation, but sometimes it is flexible depending on available rooms. For example, patients who are suspected to have infections are admitted to a cubicle room in England, including neonates and very young children due to low resistance, while there is a lack of cubicle rooms in Thailand.

“...because they need isolating, they’re all babies, all of them under the age of 18 months old need isolating and in the winter months there are not enough cubicles in the hospital so what we do is we convert one of the bays into a bronchitis bay, and then all the babies are managed in their because they are not going to pass it onto one another because they can’t, because they are all positive anyway, they’ve all got it....”

(Interview 5 England)

“..... There are two shared rooms for patients with low resistance, such as chemotherapy patients and burn patients, but the cubicle room can only accommodate one patient who has got an infectious disease such as chicken pox, tetanus, rabies, and so on.....”

(Interview 6 Thailand)

“.....MRSA cases will be put in the separated room and staff who have contact with them need to use long gowns if they need to have contact and hold the patient, but if they only go into the room they can use only an apron, then they need to wear gloves, a mask and a cap as well...I will use a mask, gloves and take more care with hand hygiene. Moreover, patients' files are not allowed inside the room.”

(Interview 7 Thailand)

During observation, it was clear that there are some difficulties such as lack of cubicle rooms in Thailand. Here, patients with some kind of infectious disease are put into the same bay rather than put into a single room, due to the fact that staff and cubicle rooms are limited. Thus, in Thailand I saw that patients with MRSA were put in the central bay in the paediatric ICU because there are not enough staff to look after only one case in a cubicle room. However, all equipment and clinical waste were separated from other patients. A long gown was provided for staff and visitors but I did not see any staff use it, although visitors did. However, patients with MRSA in general wards are put into the cubicle room if it is available and there are enough staff.

“As you've seen, we didn't put the MRSA case into a separated room but we leave more spaces between the patients' beds instead.... and we assign one nurse to take care of them, and emphasize hand washing more. This is because we haven't got enough staff to work in the cubicle room... Do you understand what I mean?so if we decide to put the patient in that room, we have to assign one nurse separately as well... but if they work in the central unit, they can see the other cases and can tell other nurses if some cases have anything wrong...But if they work in the cubicle room, they will work separately.”

(Interview 8 Thailand)

Moreover, in Thailand, some immunosuppressed patients such as those with diarrhoea, HIV and chemotherapy are put in the same bay if cubicle rooms are not available, and this is quite difficult to control if there are many children

staying together in terms of the nature of children, as discussed before. This is also the case in England when there are a lot of cases of bronchiolitis admitted.

“Yes because instead of using six cubicles, we just use one bay. And we just have all the bronchiolitis children in there.....with regard to diarrhoea in children, we mostly found in children less than 2 years....with the result from rotavirus”

(Interview 6 England)

Overall, regarding patient's health status and isolation policies, it can be seen that some difficulties remain in Thailand due to poverty, education and limitation of funding and resources, and these factors separate Thailand and England. Varieties of infections are slightly different due to microbes which rely on different weather and prevalence. This topic will be described later in the country specific disease topic.

Children were treated differently from adults in terms of isolation policy in order to support the attachment and bonding which are basic needs for paediatric patients. For example, children who meet criteria for isolation are admitted in the cubicle rooms and their parents always stay overnight with them in general wards both in England and Thailand. Toys from home were allowed for children. During observation, I saw nurses from both Thailand and England talk with patients even when they are very young or not fully conscious.

“.....children need attachment and bonding, so we need to touch them to promote psychological support, so nurses, parents or guardian need to be more concerned about hand hygiene in order to look after children.”

(Interview 3 Thailand)

However, there are limitations to visitors in both countries. Parents and visitors are also informed about the hospital stay and visiting times when the patient is admitted both in Thailand and England. There are also lots of leaflets provided in both countries.

Visiting time was limited in the intensive care unit in Thailand whilst it was not limited in the English hospital. Visitors who are less than twelve years old are not allowed in Thailand, even if they are siblings, whilst they are allowed in England. Only one or two visitors are allowed at a time in the ICU in both Thailand and England, but visiting time is limited to between 8 AM and 8 PM in Thailand while parents can stay overnight with a child in England.

“We don’t have an age limit, but for children without vaccination immunisation obviously we warn parents; they’d say can we bring in the younger children and we’d say there’s a risk of infections, but there is no actual age limit before they can come in but we do advise if it’s babies - tiny babies and so if families or parents that stay develop vomiting or diarrhoea, all the virus things, they’d have to go home. So if they are unwell we advise them to go home and ideally leave the ward. And we haven’t got vaccinations for the siblings, like the visitors really.”

(Interview 4 England)

“Sure, we have to inform them because there are such a lot of visitors coming around all day, and if they do not comply hygiene regulations in the patient’s unit, it will cause their children to be at risk of infection as well. So we have a nurse who is responsible for informing parents and guardians when a child has been admitted..... children who are less than twelve are not allowed to access the ward because we don’t want them to get an infection after visiting patients.....”

(Interview 1 Thailand)

In the general wards, there are no limitations to people who are older than twelve years old in Thailand; however in England visitors are limited to two to three people per patient. I observed many visitors in Thailand, including parents, relatives and grandparents, whilst most family members that I saw in England were parents on their own. In Thailand, only one female visitor is allowed to stay overnight with a child while there is no limitation in England. This issue will be discussed in depth later.

“No we don’t have that restriction...we try to limit the number of people to two or three to a bed. But once they go then somebody else can come. I think in the maternity ward where the newborns are they tend to – they used to I don’t know if they still do say that only siblings can visit. So you can’t have your nephews and neighbours visiting the children.”

(Interview 3 England)

“..For visitors, there is one visitor (female only) staying overnight with the patient but the day shift visitors are allowed to visit from 8 AM to 8 PM without limitation, except children under 12 who are not allowed access. Thus it is quite hectic in the day shift because there are a lot of staff, healthcare providers and visitors in the unit.”

(Interview 9 Thailand)

Play and toys are important in paediatric patients both in England and Thailand. As can be seen, most paediatric wards allowed patients who were well to play because they want the children to feel like they are not very sick. This can reduce patients' stress and tension. However, play and toys are important factors that affect IC practice as well.

“I think that toys are a big issue for the children's ward, I think they are a huge issue.”

(Interview 6 England)

“That's it. Social is such a big thing isn't it, to play is equally as important as social skills, equally as important as all our other treatments. Where as adults they will read a book won't they.”

(Interview 5 England)

“Yes if the patient is in good health and can play, we will allow it if they ask in terms of holistic care. However, we have got a lot of toys here, so if the patients are in good health, we will offer them. As you see, we offer television for a patient who is in good health as well.”

(Interview 9 Thailand)

Regarding this issue, there are minor differences in practice between England and Thailand, including toys, play specialists and toy care. Plenty of toys and things were seen in England while these were limited in Thailand. Toys from home are allowed both in England and in Thailand, but I did not see any patients admitted with toys from home in Thailand. Meanwhile, I saw that all children who were admitted in England brought their own toys. So I asked the nurses how they ensure that their toys are clean enough for patients, particularly patients who are having an operation because they also allow children to bring their own toys to the theatre room. Some are even allowed to

bring them with them to the operating room (Observation 1 England). Toys in the unit are maintained by the play specialist and HA, but toys from home are the parents' responsibility.

"Parents are responsible for the children's own toys...however, if it looks very dirty, I will tell parents to tidy it up first and offer another toy from the ward"

(Interview 1 England)

"...Toys and patients' clothes from home will be cleaned at home by parents..."

(Interview 7 England)

"I didn't ask parents to clean or launder a toy before coming but for our toys we will clean them every time after use by one patient. To be honest, we've just become concerned about toys after we found out that that's why the infection rate is still high, so we think about toys because before we didn't clean them enough, so it might have caused cross-infection between patients. That's why we've become concerned about toys now. However we are not strict about favourite toys from home because after we explain how parents must ensure it's cleaned enough, then they prefer to use our toys instead. (Laugh....."

(Interview 8 Thailand)

There are also recreation rooms as I saw in England, but not all wards in Thailand. In England there is also a play specialist that runs this programme. For example, they will set up recreation for patients who are not very poorly, while nurses and nurse students in Thailand arrange these activities. There are plenty of videos and toys provided in England while these are limited in Thailand. All toys are cleaned and maintained by the play specialist or HA in both countries.

There are some difficulties identified from the study. For example, children have a lack of awareness for everything, particularly very young children. They only want to play, particularly patients who are not very poorly. Toys and play are important to make them less anxious when they are admitted. This is the most difficult issue to control in children, particularly well patients. In one example, during observation in England, one patient went to the theatre room and wanted to bring his own toys from home with him, and this was allowed by

nursing staff (Observation 1 England). In addition, there were 4 patients and their parents playing together at the play roof arranged by the play specialist. Two patients came from the cubicle room and two others came from the normal bay (Observation 4 Eng). This can be seen during observation in Thailand as well. Certain children from isolated rooms come out to play with other children in the normal bay (Observation 1 Thailand). Thus, I asked nurse about this situation and this is what she said:

“Oh!!...I did not allow only the patient who’s got MRSA but I have no idea about those cases from the cubicles...as you’ve seen, the play specialist only asked me about the MRSA case but she didn’t ask me about the others.”

(Interview 4 England)

“I think infection control is more difficult to achieve in children than it is in adults; I think that toys are big issues, for children’s wards I think they are a huge issue.....because you know you can’t really say right, you go in that cubicle and you’ve got to stay in there for three days. They are not going to do it, you know; you can’t do that, you’ve got to allow children to have a bit of space and play and you know, interact with other children. I think it’s really difficult, really difficult. Thinking about it now it is really hard.....One... it is because the adults are more aware of it, as patients they are more aware of it, whereas children are just... well they don’t care do they, they’re running in and out of the ward and they are running in and out the play room and you know ...playing with all the toys.”

(Interview 6 England)

“It depends on their age. If they are more than 12 years old, they will follow our suggestion. In contrast, if they are very young, we have to tell the parents to look after their child.”

(Interview 1 Thailand)

Therefore, in relation to children nursing care as presented above, there are special considerations that nurses should be aware of, including the nature of children, growth and development, vaccination, toys and play, family centred care, children centred care, attachment and bonding, and so on. This knowledge may help to investigate and implement nursing intervention as a consequence.

As I presented in chapter two, IC guidelines were developed for adult patients, and some practices might not be suitable for children. According to the interviews, most nurses agreed that prevention and IC in children is more difficult than in adults, as follows:

“I just think they have low resistance too, and some bugs out there –that’s why some bugs are starting to make a comeback as well. You know stuff that you’ve not seen for years is starting to come back as well. And some of it is to do with the fact that the kids just sit in the house all day. Don’t want to go out and play in the garden or play in the field or whatever, and I think some of the fact is to do with us as well”.

(Interview 1 England)

“If you work with young children, you will get the same problems, and I can say it is very hard to find a balance between growth and development promotion, and risk of infection. As you see we have got six beds in the separated room which is used for low immune resistant patients. If there are two patients inside that room, we can let them play together but sometimes if there is only one child there it is quite hard to let him play alone because they haven’t got poor symptoms, just admitted to get some radiotherapy or chemotherapy, so when his parents don’t stay with him he always goes out of the room. It would be nice if we had a play specialist.

(Interview 6 Thailand)

As can be seen from the study certain IC protocols in adults are needed to be adapted for children.

“In my opinion, I think that any type of equipment that you use with children should be for anyone, should be single use so in my opinion any child that comes in that needs heart monitoring, oxygen level monitoring, blood level monitoring temperature monitoring and things like that, they should have their own blood pressure cuffs, they should have their own stethoscope next to the bed or in the cubicle or whatever and it should be there for the length of their stay, I think that would be a good recommendation but it all comes down to finance. And we would never get the finance to do it, not here anyway they’d laugh at you.”

(Interview 6 England)

“Uhhmm, sometimes I think it is difficult to balance between IC and paediatric nursing because nursing children is more complicated than adults. For example, they need to promote physical and emotional development, especially in long term admissions, so the IC team should be concerned about this issue as well as that. What we do is different to adult nursing. It would be very nice if they had IC protocols in children and looked at how we can deal with cross infection while promoting child development as well.”

(Interview 3 Thailand)

“For example, in long term immunosuppression patients we have to check their white blood cell count before we allow them to have contact with other children. If they are very poorly, we ask their parents to be with them all the time because they can control their child but we have to educate parents about complications if they lack knowledge and understanding about preventing infection. If they want to go anywhere at any time, they should tell the nurse, so we can get someone to stay with them for a while. When they are not poorly, we can allow them play with other children in the play room in order to promote child development and emotional development as well.”

(Interview 6 Thailand)

In both countries IC protocols which were intended for adults were also applied to children. One area where this did not happen involved cannulae. In adults, guidelines recommend that cannulae are changed every three days to reduce the risk of infection. However, this period was often longer in children as cannula insertion is difficult and upsetting. During the study I observed cannulae which were leaking or clotted particularly in children around the ages of two to four years. When cannulae did leak or a rash was observed around the insertion site then the cannula was changed more frequently.

“Regarding the IV set, it will be changed every 3 days, but cannula...we won't change it every 3 days as for adults,.... but it will be changed only if it's not working such as if it's clotting or leaking.”

(Interview 6 England)

“Normally the insertion plug or cannula will be changed every 3 days in adults but in children it is difficult to do compared to adults because it is very difficult to find the lumen and, moreover, children are more vulnerable about infection and they don't want to participate while they have to be injected or have any tube inserted in their body.”

(Interview 10 Thailand)

The most common problems from intravenous caring were found as follows:

“We've had irritations from the drugs, you know....for the tissues where the intravenous took place or we have some swelling where the fluid has collected but mainly just problems of irritation...”

(Interview 4 England)

“It used to be found but in quite a rare case. That case had a cloxacillin drip for a long time, and we found that it looked like a burn around the insertion area, so we took it off and notified the doctor to investigate the problem immediately. Fortunately it had only just happened... not as severe as a gangrene wound.”

(Interview 1 Thailand)

In order to promote children’s physical and emotional development, toys were provided in the units, and hospitals attempted to make the ward environment more homely for children. Children’s wards were decorated especially for children, including cartoon wallpaper in both Thai and English hospitals. In addition, in England, tutors work in some hospitals to teach children who are admitted for a long period, and some children are allowed to visit home for one or two days.

Both Thai and English parents were involved in child care based upon the family centred care concept, which is an aspect of paediatric nursing. Parents were informed and taught to participate by nurses.

“..... Like with the children we have to be more supportive of the parents, and we have to educate them. We should update the parents because the children depend on the parent.”

(Interview 10 England)

“I have to educate parents or visitors who come in close contact with children because they are closer to the children than the nurses, so if they see anything wrong they should take responsibility and report it to the nurse immediately. We emphasize family centred and children’s centred care, so parents and visitors are with the child all the time. For example if they see any discharge from the child’s wound such as a ruptured appendicitis wound, they should report it to us as soon as possible.

(Interview 1 Thailand)

However, if parents or visitors don’t take responsibility, it could adversely affect IC practice. I observed that parents and visitors in the two countries were different in terms of culture and life style as discussed in the section 4.4.1.

4.4.4.4 Training and experiences

As I had seen during study, fundamental knowledge of IC practices is additional

knowledge that all nurses are required after finished degree, but advance practices regarding IC practices are trained only in nurses who respond for ICTs. Certain nurses are agreed that more practices and training might be useful to encourage staff.

“Yeah, I mean the amount of training that we have and we realise how important infection control is and I think the more experienced you are you realise how important infection control is, and then I think you’re more likely to follow the infection control policy, because you recognise that it’s fundamental that there’s not an outbreak of any infection on the ward and you know the consequences if that occurs, so I think everyone will try their best to try and – certainly be aware to prevent and decontaminate any infections.”

(Interview 4 England)

“I think further training is necessary for IC practice.... only the updated training is not enough to develop better practice. For example, as you’ve seen we developed new study about mouth care during suctioning with our patient when we found it’s useful to prevent VAP. This was suggested by a nurse who has been trained in the advance training about VAP.”

(Interview 10 Thailand)

To prevent and control infection are not only the nurses’ responsibility, but it should also be done by all staff who have patient contact.

“The training should not only be for nurses but it should also involve other staff because we have to work as a team and sometimes I notice they are important in decreasing NI in our hospital as well.

(Interview1 Thailand)

Regarding HCAs, when I asked about what kind of HCAs that have been found in their unit, a lack of data were obtained from paediatric nurses in England. Only two nurses were confident about answering; one of these was a link nurse. In addition, most HCAs that nurses in England have experienced is MRSA, and they also perceive that some infectious diseases acquired outside hospital are types of HCAs or NIs, such as bronchiolitis and tonsillitis.

“Depends on the time of the year, in the winter, it’s bronchiolitis.”

(Interview 6 England)

Meanwhile, the majority of paediatric nurses in Thailand perceived that HCAs are acquired in hospital, not just MRSA, and nurses are the first person accused if HCAs happen in their ward. Data obtained from the interviews shows there are more varieties of HCAs in Thailand, depending on the wards, than in England. For example, neonatal, newborns and children in the ICU are the most vulnerable, so they are at high risk of HCAs including VAP, conjunctivitis and omphalitis.

“.....And I certainly never had known a ward close through it. I know next door they have, ward 10, because they had an outbreak of diarrhoea but we’ve never had it on here. I think that really is bad, that is poor nursing, it doesn’t look good if you have to close your ward for diarrhoea.”

(Interview 3 England)

“We get urinary tract infections in younger children but they tend to be treated with anti-biotics and it clears up. So, yeah we have got.....”

(Interview 4 England)

“Most problems in the NICU are omphalitis, pneumonia and conjunctivitis.”

(Interview 3 Thailand)

“Most SSI is found in craniotomy or VP shunt. I don’t know what is wrong because we rarely touch their wounds. I mean the patient comes out of the operation room with a closed wound and we are not allowed to open it or do anything with their wound, but they get NI from their wound as a result.....”

(Interview 9 Thailand)

As can be seen above, there are some difficulties regarding detecting HCAs, as found from interviewing because nurses appeared to have different knowledge of investigation HCAI. There are difficulties in identifying where a patient got MRSA, and in detecting HCAs. For example, during the observations, I saw that when a patient was suspected of having an HCAI, omphalitis, chicken pox and swine flu, they were separated into the cubicle room straight away in Thailand. Meanwhile, swine flu was admitted to the normal bay in intensive care unit in the English hospital. When lab results

showed that the patient had swine flu, he was moved into the cubicle room (Observation 7 England). I asked the nurse about this problem, and she said:

“It depends on doctor who takes responsibility to detect infection.....and that case is the first case of swine Flu we got, after that all cases who suspect swine flu, we put in the cubicle room without waiting for the lab result”.

(Interview 7 England)

Furthermore, as I have seen within the study, experienced nurses are more confident than inexperienced nurses, and also have higher competency regarding IC than inexperienced nurses. For example, they have more confidence in reminding doctors and parents to follow hand hygiene guidelines than junior nurses. In addition, nurses who have been trained in IC do more appropriate hand hygiene washing than inexperienced nurses.

“Yeah, I think if you’re more senior obviously you’re coordinating them all you’d have to think about how you treat the patients as well..... Yeah, I think with experience you certainly could get greater knowledge..... Yeah, I mean the amount of training that we have and we realised how important infection control is and I think the more experienced you are you realise how important infection control is, and then I think you’re more likely to follow the infection control policy, because you recognise that it’s fundamental that there’s not an outbreak of any infection on the ward and you know the consequences if that occurs, so I think everyone will try their best to try and – certainly be aware to prevent and control any infections.”

(Interview 4 England)

“I think that does come with experience and confidence will come, and building relationships with the team, the doctors need - you know, you do need a good relationship to say stuff and have it respected and listened to properly.”

(Interview 5 England)

“For me, I think experienced nurses can deal with the patients, parents and other staff better than novice or inexperienced nurses. However, they can also give any information to support them when they do something wrong (smile), do you know what I mean?”

(Interview 10 Thailand)

Moreover, nurses who have been trained in advanced nursing are more likely to deal with IC practice than inexperienced nurses. I have not observed many

nurses spend too much time hand washing; only the link nurses or nurses who have been trained in IC were doing the proper technique and proper length of time. In addition, I noticed both English and Thai nurses who finished their training in advanced nursing have higher competency and confidence to deal with doctors and parents than other nurses, even if they have worked for many years in the unit. However, not many nurses in England take advanced courses in nursing.

It can be seen the higher skills of inquiry based learning and decision making in the Thai nurses who were finished advance nursing.

“..Previously, we found high rate of central line infection, then we had a rethink about our method during insertion and caring. Actually doctors will respond to do that. Then we produced a special set to do central line procedure directly after we interview doctors about the problems of difficulties of central line insertion. I reviewed literature from internet and found that 2% clorhexidine is more effective than betadine solution to prevent infection from skin, and then we change to use 2%of clorhexidine instead.”

(Interview8 Thailand)

Regarding this issue, Thai nurses and English nurses are slightly different. All RNs in Thailand have to take part in a nursing conference or an advanced nursing course to collect the 50 points in order to renew their license every 5 years. This results in Thai nurses being able to undertake a greater variety of nursing and able to perform more practices than English nurses.

“As we have to collect CNEU credits, we will manage to attend the course. For example, we will post upcoming conferences or meetings on the board. If someone is interested, she will reserve a place on that course.....”

(Interview 6 Thailand)

RNs in England must maintain a portfolio to show continued learning, however, these are rarely checked by the Nursing and Midwifery Council.

“Oh! well basically here in uk its a random thing. I think technically we have to do study and seminar. The NMC will call people by random. Oh!! that will be unlucky if she will be called (Laugh)..... I have no idea what gonna happen. Are they working here? I do update, so I can show my certificates just in case... hope not.”

(Interview 7 England)

In Thailand if nurses do not collect 50 CNEU in five years, they have to retest the comprehensive exam in eight subjects as the same time as they do to obtain the license.

However, due to occasional lack of staff, not all nurses can attend meetings or the external conferences. The candidate is selected from relevant duties. For example, if there is a conference regarding IC, ICWN will be selected to attend the course, or If there are other topics, they will ask nurses to volunteer. In addition nurses have to manage themselves if they want to take a degree course or a long training course of more than three months.

“Yes, they usually send our staff to participate in many conferences but they always select based upon job responsibility. For example, if there is any meeting or conference about hygiene, staff who work as hygiene ward will be sent to participate that conference.”

(Interview 1 Thailand)

Regarding standards of IC, as presented previously, nurses are trained on this issue from when they start working, and are also updated every year. Moreover, there are IC protocol files in the unit for nurses to read and update themselves.

“Uhhh, I will read it when I get a problem, and also when I want to update myself on infection control guidelines or infection control news. For example, when we found some criterion which might match with NI but I am not sure, I will go back to the file, or if I am not sure on some protocol, I will read it again and again.”

(Interview 9 Thailand)

However, there are some difficulties regarding this issue. For example, in Thailand both experienced and inexperienced nurses were less confident about reminding any other staff who had greater confidence, such as doctors, and new RNs were less likely to remind doctors than senior nurses. In England, inexperienced and experienced nurses appeared to be more assertive in reminding doctors than experienced nurses in Thailand. This also related to the individuals who develop differently in Thai and English cultures previously described.

“I’ve seen but I feel less confident about reminding them because I’m a new RN here and I think I’m not daring enough to tell them to wash their hands before doing something..... I will tell the senior nurse to remind them.... (LAUGH) but not for all doctors, some doctors are very kind, so we can tell them like we’re kidding.”

(Interview 7 Thailand)

4.4.5 Poverty and wealth

England is a developed country while Thailand is a developing country. Thus, there are several differences as can be seen from the literature reviewed (section 2.5). These include the country’s income which contributes to public welfare and the government policies. In addition, different regions can also lead to different weather. Eventually a country’s differences impact on IC practice as a result. Thus on this issue, data obtained from this study will be group into three main groups, 1) country specific factors, including public welfare and specific disease, 2) government policies, funding and resource and 3) guideline implementation.

4.4.5.1 Country specific factors

Country specifics include geographic background and culture which contribute to different implementation and infection control practices between England and Thailand. For example, culture is a key factor influencing lifestyle which could contribute to different methods to prevent and control infection in children. This will be presented in the following section.

1) Public welfare

According to the literature reviewed (section 2.6.1), English people have extensive social welfare services leading to high standard of living, and English people have a higher education than Thai people, as presented previously. Unemployed people in England also obtain living expenses while they are

looking for a job whilst Thai residents have to support themselves. There is child benefit and child tax credits for children in England whilst there is no support of this kind in Thailand.

In addition, healthcare for all children in England is free. This is not the case in Thailand where there is a minimum rate that Thai patients should pay. In addition, certain antibiotic drugs which are imported from abroad are paid only in specific cases.

In relation to education level in both countries, it can be seen that almost 100% of English people can read and write whilst there are some parents in Thailand who cannot write properly. This was confirmed by the nurses in the clinical setting.

“...Most patients admitted here come from a poor family..... if they were rich they would be admitted to the private hospital (Smile) and the common problem that we find in this ward is diarrhoea, which is commonly found in poor families...it's mostly found from 2 to 6 years..... most diarrhoea were resulted from bacterial infection such as Cholera more than viral infectionsome children don't get vaccinated because their parents are uneducated and very poor.....They also think some vaccines are not important and they can skip some doses. These problems are due to the parent's education too.....”

(Interview 9 Thailand)

2) Specific disease

As discussed in section 2.2.2 (p24), micro-organisms are key factors leading to infection. In this study, most micro-organisms causing HCAs in Thailand and England are similar except for certain HCAs which are caused by particular micro-organisms resulting from different weather conditions. There are some different microbes that rely on the weather and the environment, such as Avian Flu and so on. For example, some bacteria growing in food can cause diarrhoea. As can be seen in the study, there are many cases of bronchitis in winter in England, and there are many cases of AGE in Thailand, which is a tropical area.

“..but I would say our big one over the winter.... is bronchiolitis and we will open up a bay... you know we have two bays and we will have one bay just for children with bronchitis and that is treated as a big cubicle, so you’ve got your gloves, your aprons and we have all the equipment in there that we could possibly need, feeding sets, milks, nebulisers, oxygen masks. Everything you could possibly think of. We would have all that in that bay ready to use.”

(Interview 6 England)

*“The majority of patients admitted in this unit have respiratory tract infections such as pneumonia, diarrhoea or AGE and febrile convulsion.....
.....patients with diarrhoea or AGE caused by bacterial infection are mostly admitted in summer...because the weather is very hot. I’m not sure what is going on, maybe it’s because the food is not good enough to eat”.*

(Interview 7 Thailand)

According to the interviews, there are not many cases of MRSA in children both in Thailand and England compared with adult patients. However, from the interviews it seems England experiences more cases of MRSA than Thailand. Most MRSA comes from chronically ill patients, and it is difficult to identify where it comes from.

“I think with children.... with the incident.... the preference of infection control certainly more in adults and there seems to be less in children. And I know for instance in the case of MRSA, I think adults are routinely screened for MRSA, but for children I think in our policy we class them as a low risk, and low risk patients are only treated once with precautions using anti-bacterial washes and things the ones that’s got a central lines in or the known cardiac patients there’s only a select oncology immunosuppressed and compromised children that have MRSA swabbed. And they use the anti-microbials like anti-infectious - like a precaution, now all the other children they seem to come in the low risk category so they aren’t swabs as thoroughly as adults, which we discussed and I don’t know what’s the reason for that.....and it is just the general bug it’s not sourced from water or anything really. I mean with MRSA we do get people like children with chronic illnesses. And we have them but we do routinely swab, and we have to treat them with the infectious wash and stuff and like anti-bacterial nasal cream and that’s how we treat them for five days and then swab three consecutive days until they are negative. But we don’t get a big outbreak, and unlike C. diff, that was a big outbreak on the adult side. But in children we have known to have it too so... it doesn’t seem to be any huge outbreak that’s contagious.”

(Interview 4 England)

“Probably less than 10, which I’ve actually been on shift with. There have been less than 10 separate patients since I’ve worked here.... Yeah, when they are

first admitted we swabbed them for MRSA, doesn't matter what they came in with."

(Interview 2 England)

"Not often, I can say that I just found 2 cases this year, and one was admitted in another hospital from snake bite before he was referred to us because of an infected wound but he hadn't got any fever, so we weren't concerned about MRSA at first. I mean we didn't check him after 24 hours of referring, and nobody noticed that he had a little wound on his scalp. We saw it after our staff wanted to shampoo him, and we found some discharge from his scalp, so the doctor asked us to send a sample from his wound to check, and the result showed that he'd got MRSA from the scalp sample, not from the snake bite wound..... one more case was a long term patient who was admitted to many hospitals and many wards, so I don't know where he got MRSA but he hadn't got a high fever..... It usually happens from outside or from home because we do blood cultures in every new admission, and the lab will show MRSA before 24 hours after admission. We rarely find it happens after admission."

(Interview 6 Thailand)

4.4.5.2 Government policies / funding / resources

This issue also related to geographic background between England and Thailand because healthcare systems are mainly supported by the government in both countries. These include the government policies, funding and supportive resources and guideline implementation. Thailand is a developing country while England is a developed country, thus there are many differences with these issues and they will be presented as follows.

1) Government policies

This seems to be an outstanding issue, as I have seen in this study, in terms of the difference between developed and developing countries. Even though the standards of IC guidelines in Thailand and England were adopted similarly, because they were developed based upon international standard policy from acceptable institutes, however, different IC policies were found in the local policies. Different IC policies in the local area influence funding and resources in implementing practice as a result. In this study, it can be seen that government policies are important for IC practice because most local IC policies in both countries come from national policies.

According to observation, the local IC policies used in England are based on the national IC guidelines which are nearly the same as international standard guideline from APIC-HICPAC, CDC and WHO. Meanwhile, the local IC guidelines in Thailand were modified into practices. Lack of knowledge regarding who develops IC guidelines in the hospital was noted from interviewing in England. In Thailand, the national guidelines were developed from IC experts around the country. The majority of experts are nurses and microbiologists. The national guidelines were applied later in clinical settings by the IC committee, depending on the hospital's resources such as human resources and the hospital's budget. Most IC committees comprise IC nurses (ICNs) and IC ward nurses (ICWNs).

"Basically, all IC protocols have been done by nurse practitioners from different wards and ICNs based upon the national standard for IC applied in our hospital. I mean they were assigned to do a different topic. For example, the ventilator care protocol was done by nurse practitioners from PICU....."

(Interview 8 Thailand)

2) Funding and supportive resources

I observed that supportive resources are relative to the funding from the government in both countries. Supportive resources include staff and facilities such as equipment and technology, and these are limited in Thailand. This issue will be presented as follows.

In this study, there is plenty of supportive equipment in England while this is limited in Thailand.

".....we have quite good policy in place and a lot of our equipment is for a single patient.... so we can follow our policy because those things are put into place. Because we've got single patient equipment it makes things a lot easier for policy to be adhered to, because you're not running the risk of using the same equipment on other patients and obviously risking cross infection in that way because you just use it and that's it, throw it away, and it's easy and it's simple, and I think that does help."

(Interview 6 England)

“As you have seen, we haven’t put alcohol gel by every bed, just only some patients who we have to be more careful about hand hygiene with, or in cases of high risk of infection and those that have many invasive insertions.”

(Interview 6 Thailand)

Limited equipment links to guideline implementations. These include infrastructure such as environment management and the use of standard protocols regarding protective equipment. Some implementations need to be balanced in Thai hospitals.

“Endo-tracheal tube is single used but administrator sets are reused. It is made from silicone and can reuse after re-sterilisation....according to the circuit, according to IC protocol, it should be changed every 3 days but we have problems that we haven’t got enough sets and circuits to change. So we tried to review literature and we found that a unit somewhere hadn’t changed ET tube and circuit every three days. It depends on the patient’s secretion. However, we tried to link with PI study shown that the maximum number of days that germs are not found in the circuit is 7 days. However the PI unit suggested us to extend from 3 days to 5 days. So now we change circuit and administrator sets every 5 days because we haven’t got enough sterilisation set.

(Interview8 Thailand)

In Thailand and England, the infrastructure was slightly different, such as the space between the patients’ bed and a number of rooms in the units.

In England, the maximum bed capacity in the general wards is approximately twenty-six to twenty-eight patients. The unit looks tidy and clean. There are four bays and eight cubicle rooms. Each bay can accommodate six patients. A sink (washbasin) for hand washing is in each individual bay and cubicle room, and there is also a hand washing poster over the sink. There is a treatment room, play room, food preparation room, sluice room and stock room. There is also a playground outside the building. A lot of toys and recreation are provided for all children and maintained by a play specialist. The cubicle rooms are also tidy and lots of resuscitation materials are encircled. There are nearly thirty nurses in the general ward, including full time and part time nurses. One nurse looks after four to six patients in the general ward.

In the ICU, there are five patient beds and three cubicle rooms. The unit is also tidy and clean. The patient beds are set around the nurses' station. There is plenty of essential equipment provided nearby each patient's bed, including pipe lines and protective equipment. The cubicle rooms in the ICU are negative pressure and also have pipe lines and individual equipment. In the ICU, one nurse looks after one patient bed.

In contrast, staff and rooms are limited in Thailand both in the general wards and in the ICU. In the general wards, the unit is separated into four bays, two shared rooms and two cubicle rooms. Each bay and room can accommodate six patients. Two shared rooms are used for patients with low resistance, such as chemotherapy, diarrhoea and burn patients, but the cubicle room can only accommodate one patient with an infectious disease such as chicken pox, tetanus, rabies, etc. There is also a room for scrub burns and dressing, a room for recreation and a room for rectal irrigation in a separate surgical ward. A sink (washbasin) for hand washing is in each individual bay and cubicle room, and there is also a hand washing poster over the sink. The unit looks tidy. The maximum bed capacity in the general ward is approximately thirty-four patients while there are twenty nurses. One nurse looks after six to eight patients on a day shift but will look after eight to twelve patients on weekend and the night shifts. There is a recreation room for children in some wards.

In the paediatric ICU, there are seven patients' beds and one cubicle room. The unit is quite tidy and has good ventilation, and there are sinks located in each bay. There is a trolley for each patient's files, and also alcohol gel on every patient's trolley. At each bedside there are monitors such as a TPR monitor and a pump. These are cleaned by the HA after the patient has been discharged from the unit.

Regarding environmental care, disinfectants are used to clean the floors and the environment in both countries, but there are slightly different practices. For example, the patients' beds are cleaned every day using detergent but floors are cleaned using antiseptic in Thailand, whilst this is done only after a patient has been discharged in England. Moreover, disinfectants are always used to

clean the bed and room in England. If the patient had an infectious disease, the room is cleaned extensively (called a domestic clean), including the curtains.

“Yeah we use chlor-clean which is chlorine based which we use to clean, I can’t tell you what percentage it is. It’s really high and that is recommended, we didn’t used to, we used to use “I can’t remember what it’s called.” We used to use something else. But recommendations came in from not just like locally but nationally....”

(Interview 5 England)

“If it’s infectious like meningitis or diarrhoea and vomiting then they domestic clean it. They clean it differently sometimes. They like take down the curtains and they clean it better than the healthcare assistants.”

(Interview 2 England)

“...No we use only detergent except for the cubicle room after discharging infectious patients; we will use disinfectant to tidy up all things, including the patient’s bed, floor and wall...However, we use disinfectant to clean the floor every day.”

(Interview 2 Thailand)

In England, most equipment is disposable and single use such as bed pans, so after use it will be discarded directly into the clinical waste bin, whilst steel bed pans are still used in Thailand. After use it is soaked in a disinfectant agent, then it is cleaned and re-used again. Regarding suctioning, I had seen a physiotherapist use six to seven suction tubes-- one tube for each insertion into the same patient-- for suctioning until the patient’s airway was clear in England. Meanwhile, one suction tube was used for suctioning in Thailand.

Regarding parenteral feeding, as I observed, nutrition and food (Blenderized diet (BD) or blending food) were available as ready-to-use feeding in good packaging in England, including the formula for newborns. There was also fresh food for older children, such as sandwiches and snacks provided during the day, distributed by healthcare assistants (HAs). Meanwhile, in Thailand, food was cooked freshly every day by the food department. This department is also supervised by nurses and food hygiene officers. Blenderized diet and formula are distributed daily and kept in the ward fridge, and warmed

again before feeding by soaking in warm water. Nurses in England were responsible for feeding whilst HAs were involved in Thailand. However, some difficulties were noted during observation, such as regarding the use of gloves. For example, gloves are not worn during enteral feeding in Thailand, whilst they are always worn in England. In addition, a lack of administration set was seen in the Thai hospital, however this affects IC practice eventually.

“...We will change to a new feeding set every 3 hours, but after use them, the HA will clean them and send them to the Re-sterilization unit.... and it will be sent back here to reuse again. Anyway if we see it is very dirty or functioning very poorly, we can discard it.”

(Interview 2 Thailand)

Sterile gloves are single-use in England, but are re-used in Thailand for some procedures, such as suctioning. For example, when sterile gloves have been used for the first time, they are soaked in disinfectant and cleaned, and one side of the gloves are packed with the suction tube for using as a suction set, and are sent to be re-sterilized. After they have been used a second time, they are disposed of in the clinical waste. There are alternatives to natural rubber latex gloves in both countries for staff with allergy problems.

“Sterile gloves will be used in invasive procedures and wet dressings.....and disposable gloves will be used for some activities where there is contact with secretion or excretion..... For sterile gloves, we send them for re-sterilization to re-use them for suction procedures. I mean sterile gloves are used with other invasive procedures, they will be cleaned and sent to the re-sterilization unit and then they can be packed into the suction set because we have to do this activity a lot on one patient in intensive care, so it can save money for the hospital. Anyway we can discard them when the quality is not good enough to use in the next round.”

(Interview 3 Thailand)

Disposable gloves, provided for non-invasive procedures, are worn in all activities in England, even preparing injections, while they used for some, but not all, activities in Thailand. In some activities such as bathing patients and TPR check, nurses do not have to wear gloves. However, if nurses have any open wounds, gloves must be worn to protect themselves. The information

below created some confusion when I saw someone wearing gloves and someone not wearing gloves for the same intervention, such as preparing drugs and medicine for patients.

“... Yes you use sterilised gloves for cauterising,...for lung punctures they don't use them for cannulation or blood taking just normal gloves. For dressings they would use sterilised ones.”

(Interview 3 England)

“For bathing a patient, the ICN allows us to do it without gloves but the nurse should decide which cases gloves should be used for. For example, I will use gloves when I have contact with a patient who has got some skin problem or has some discharges or excretion as you saw me do in that case.”

(Interview 10 Thailand)

“Disposable gloves will be used when necessary because if they are over used, we will have got not enough gloves to use with further procedures, and we will also consider using masks if we are in contact with a patient who is at risk of respiratory infection.”

(Interview 7 Thailand)

Disposable plastic aprons are worn in order to protect nurses from blood, body fluids, secretions and excretions. For example, aprons are used in some interventions such as cooling lavage, rectal irrigation, lumbar puncture, and preparing TPN. As I observed, aprons are used all the time in England even when nurses access the bedside. For example, an apron is put on before nurses bath a patient, and it is discarded into the clinical waste straight after they have finished the activity. When there is a high risk of extensive splashing of body fluids, blood, secretions and excretions, in certain invasive procedures, and when certain epidemic diseases are present such as Swine flu, full body protection will be worn. Meanwhile, plastic aprons and long gowns are limited in Thailand, they are only used when nurses have contact with patients' blood, body fluids, secretions and excretions, and when dealing with patients with some infectious diseases, such as chicken pox, MRSA and so on, also whilst doing some invasive procedures such as preparing TPN.

“We haven't got plenty of plastic aprons and we will use them in some cases where there is a risk of extensive splashing”.

(Interview 1 Thailand)

Masks are used more often in Thailand, particularly for suctioning and some invasive procedures while I did not see masks being used during suctioning or when doctors inserted cannulae in England.

“.....you know we rarely wear masks and the only other illness that we would wear masks for is TB and we don't get that very often in England so... we don't wear masks with a normal patient... no, with a patient who hasn't got an infection but what we would class as infectious would be meningitis or TB, CMV C.dif, all those kinds of illnesses would be children in cubicles, but if you only get a child with a chest infection on a unit and they are not in a cubicle we don't wear masks to do suctioning or anything like that, we wear gloves and aprons, that's it.”

(Interview 8 England)

“Yes, if we work with high risk patients, especially in the intensive care unit because sometimes we cannot predict what is going to happen after practice. Even in this unit I will sometimes remind our staff if I see that they kissed a patient. I know it is to promote emotional behaviour in the children but if they are admitted with very low resistance, they might cross infect from us as well.”

(Interview 2 Thailand)

Moreover, face masks and eye protection are worn when there is a risk of blood, body fluids, secretions and excretions splashing into the face and eyes, and respiratory protective masks are used with epidemic cases. In this study, I observed that these are used with patients with Swine Flu in both countries.

In Thailand caps were used when nurses worked in the ICU, especially nurses with long hair. Moreover, caps were worn for invasive procedures such as when assisting with lumbar punctures, triple lumen insertion and preparing of TPN. Meanwhile, caps were not worn in England even in the ICU, but were used in the theatre room and with Swine Flu patients.

“For our hair, if someone has long hair, she has to band it or use a cap properly....so we don't use a cap if we have short hair... but we'll use one when we help the doctor to do some invasive procedures such as central line insertion, we absolutely have to use one. However, we rarely assist; mostly consultants and the doctors will assist each other. We have just only passed some instrument to them.”

(Interview 8 Thailand)

Staff are key to establishing healthcare services. In this study, lack of staff affect load of duties, healthcare services and IC practice. A discussion of duties and roles were previously presented in section 4.4.3.1.

In addition, lack of staff affects other staff such as healthcare assistants. Regarding enteral feeding, as I saw during observation, enteral feeding and flushing after feeding are done by nurses in England, but in Thailand HAs are trained to assist this activity for when nurses are busy. In this issue, some difficulties were indentified such as poor practice. Some HAs failed to perform hand washing before doing this activity as was seen during observation. In addition, HAs are trained to do this when nurses are not available. Some HAs did not use the proper technique and did not wear masks and sterile gloves, as I saw from observation (Observation 5 Thailand).

“Sometimes we can see them do poor practice, but we can remind them if we see something wrong. It’s easier than when you see doctors do that (Laugh).”

(Interview 4 Thailand)

4.4.5.3 Guideline implementation

IC guidelines are standard protocols employed in the clinical setting in order to guide healthcare staff to practice procedures in a standard manner. As was seen during observation, guidelines have been separated into several practice guidelines depending on the type of infection, such as guideline for Prevention of Catheter Associated Urinary Tract Infections, Hand Hygiene in healthcare settings, and so on.

Regarding the guideline implementation, there are certain difficulties in Thailand due to limited resources and funding previously described. Uses of equipment are basically required to be single use equipment, but the single use policy was adapted in Thai hospitals because there are limitations of funding and supportive equipment. The majority of IC committees in Thailand emphasize IC

in the ICU and operation rooms (OR) rather than general wards because patients are at high risk of infection, so all resources and single use equipment are supported for ICU and OR first, however, supportive equipment is limited in the general wards.

“According to the government hospital, there are a few units such as intensive care and the theatre room that use single use gloves or equipment, so most units still use re-sterilised gloves, so they will be soaked in the antiseptic solution after use.”

(Interview 7 Thailand)

It can be seen that there are some difficulties regarding over-prescription but it happens in private hospitals, as described by this interviewee:

“.....because you’re paying money...in private hospitals.... - I mean the other thing is you can over-prescribe it; we had a lot of over prescribing over the years in this country in the last few years. Where people go to doctors and doctors say yeah yeah we’ll put you on anti-biotics, tricky anti-biotics will infiltrate stuff, and things do grow resistant to it. But you know it was always going to happen because periodically bugs get resistant to things anyway don’t they, and we know this from history. You know they do get used to things over time, it’s no real shock really that all of a sudden we have got MRSA, well you know we chucked anti-biotics at it for long enough, it’s bound to get some resistance to something you know”

(Interview 3 England)

“Yes, in private hospitals, we mostly found over-prescription because all parents expect that their child will be treated better than the government hospital because they pay more money for them.....so, physicians usually treat the child with high spectrum antibiotics from the beginning of treatment.....”

(Interview 1 Thailand)

Moreover, nurses who work in the ICU in Thailand have to change their uniform before going into the ICU, and also change their shoes from home into hospital slippers. Parents, visitors or other healthcare staff from outside wear long gowns and also change their shoes before entering the ICU. Meanwhile, nurses, staff and visitors in England wear the same clothes from home when

entering into the ICU. As observed, some nurses wore another coat to cover their uniform, but some staff did not.

“Oh when I worked with the previous hospital in India, we have to change our uniforms, but now here, we don’t. When I was working in the neonatal ICU, we had to change everything. Like apron and it cleans, clothes are sterilised, and everything..., but here, it’s not”

(Interview 10 England)

“.....honestly, uniforms were washed at home with other clothes under manufacture guideline, but shoes are not washed in washing machine but are scrubbed by hand”

(Interview 7 England)

“Previously, we had to change our uniforms, shoes and use a cap when we worked inside here. Now we’re allowed to work without a cap but our hair needs to be banded with an elastic band if staff have long hair.”

(Interview 2 Thailand)

Patients who are admitted in Thailand have to wear a hospital uniform while patients in England wear their own clothes from home, except patients who are going to the theatre room and the ICU. All patients’ uniforms, linen, sheets and blankets in the Thai hospitals were sent for cleaning in the laundry department. Linen and uniforms from infectious patients were separated and also cleaned separately. Whilst patients’ clothes in England were washed at home, I did not see any nurses ask the parents how they washed it or remind them to wash it separately. For example, after my participant changed the linen and sheets for a patient who had MRSA I asked my participant how the MRSA patient’s clothes were cleaned, and she told me the following:

“We will put it into the red bag and then it will be sent to be washed separately, and for the patient’s clothes their parents will take them home and wash them.”

(Interview 4 England)

4.4.6 Media and public awareness

As I have seen, there has been more news regarding super-bugs and HCAIs published in the mass media in England compared to Thailand, including healthcare data. In comparison, there are a lack of publications in Thailand even though the Internet is available. However, some epidemic diseases such as Swine Flu and Avian Flu have been discussed in the mass media and on the Internet, but not for a long time.

“The thing is though like you said, people have got access to the Internet and they can look things up and read things and I don’t know what else but I don’t know when MRSA was publicized but you lived but obviously we’ve got the telly here so - and the newspaper and big big big things about it. So people are a lot more aware about the super bugs but that also works in your favour because, the compliancy thing is you know about the bugs, you know they’re there. You’ve seen what the televisions says, You’ve seen what the Internet says, so clean hands you’re killing them things so it can work but for you as well as against you. Yes, it’s good the parents know but also the parents know that the nurse people that are washing their hands should be putting gels on, they know that because they’ve seen it. It depends which way you’re looking at it.”

(Interview 1 England)

“Recently people can access to the media better than the past, particularly new generation such as my children...but for our ages they still have some problems to access the computer and internet... I think most Thai people who are over 45 years still got the same problem with me (Laugh)...”

(Interview 3 Thailand)

“Even Thai people can access into the internet better than 10 years ago, now everything can find by Google search, but the information available online are not published in Thai language, so this is still have a problem to Thai people who can’t read in English....only Thai parents who got higher education can get it.....”.

(Interview 5 Thailand)

In terms of better technology, publications and better education, English residents have greater awareness about health than Thai people; for example, some parents access the media and internet and read about their child's problem. When English parents visit their child, they will ask the nurses many questions, and always keep an eye on every aspect of nursing, and when

parents are not satisfied with the answers, they will immediately raise an argument. However, it depends on where the child was admitted, for example, I saw that these parents are more concerned when their child was admitted in the ICU. Thus, nurses have to inform parents regarding the patient's status every time parents visit, or when there are new treatments in order to update the patient's condition to the parents. I have rarely seen any Thai parents ask many questions in Thailand both in the general ward and intensive care unit.

"Yeah they do [ask many questions], they are quite involved and I think that's the way our culture is, it's quite freedom of speech and they are very knowledgeable they got the internet now so they are very up to date, everything is quite mediate there's a lot of thing in the media now days as well with the MRSA and that kind of bugs, the public are now more aware of what should be happening due to the internet and media and those kind of people so I think that's why they like to be involved and see thing being done properly."

(Interview 8 England)

"They can access Internet so you need to be careful sometimes, they know everything."

(Interview 7 England)

".....because not many parents have obtained higher education, especially in rural areas, and they are not good at using the internet..., so they always respect everything nurses do with their child but if anything happens.....Anyway, recently parents have become more concerned about nursing care compared to 10 years ago because there is more technology and media, so the less care nurses take in their nursing practice, the more risk there is of something happening."

(Interview 10 Thailand)

4.5 Chapter summary

Many factors influencing infection control practice in paediatric wards in Thailand and England have been identified in the study. Seventeen factors were identified as a result, and these have been refined into five major groups. Firstly, personal values, attitudes and beliefs were identified because these can influence personal behaviour in IC practice. Secondly, roles, duties and

relationships are important factors advocating IC practices in Thailand and England. Thirdly, education is a key factor influencing IC practice. Fourthly, poverty and wealth are crucial factors subsidizing funding and resources for IC practices. Different cultures also affect different practices. Finally, media and public awareness is a current factor influencing IC policy and practice within globalization.

Moreover, in terms of the comparative study, data were compared issue by issue between England and Thailand. The next chapter will discuss important factors in turn in greater depth, linking findings of the study to existing theory, or generating new theory.

CHAPTER 5: DISCUSSION

5.1 Introduction

The purpose of this study was to identify the factors which influence infection control practices in paediatric wards in England and Thailand, and to compare the factors identified in both countries in order to make recommendations for best practice. The main question to be addressed within this thesis is: are there different factors which influence infection control practices in paediatric wards in England and Thailand? Presented in the previous chapter were the various factors influencing IC practices in paediatric wards in England and Thailand.

This chapter will discuss the research findings presented in the previous chapter, in relation to the literature reviewed on IC practice. As described in chapter 4, six major factors were identified in this study. The factors are:

- Culture
- Personal values, attitudes and beliefs
- nursing roles and relationships,
- Education,
- Poverty and wealth,
- and Media and public awareness

These factors will be discussed in turn.

5.2 Culture

According to the findings chapter, cultural and lifestyle differences including family structure, greeting styles, religion, and marital status can influence different IC practices in Thailand and England. This will be discussed in the following section.

As described in the literature reviewed, culture is a set of attitudes, beliefs, morals, customs and laws shared by a large group of people and usually communicated from one generation to the next generation (McLaren 1998; Shiraev and Levy 2010). Culture can also refer to the categories of behaviours that reflect an understanding of culture as observable and non observable phenomena (Nemetz-Robinson 1985). The set of behaviours, overt pictures, lifestyles, customs and typical behavioural responses of nurses in the clinical setting which are regularly seen are explicit characteristics. Meanwhile, implicit characteristics refer to personalities influencing these regularities on the basis of a consistent pattern of explicit culture.

Within this study, as discussed in the first theme, religion is a key factor influencing individuals' attitudes, values, beliefs and life styles in terms of environmental influence. According to the literature, Christianity is the official religion in England (Census, Office for National Statistics 2001), whilst approximately 94.5% of Thais are Buddhist (MOPH 2007). Even though the principles of all religions teach how to be a good person, there are different contexts in each religion as described in the previous theme regarding respecting elders which contribute to avoidance of conflict between people. These differences could influence different attitudes, values, beliefs and lifestyles both in the English and Thais, which will ultimately affect infection control practice, such as working styles and negotiation skills as discussed in the second theme.

In addition, there are a few barriers to IC practice resulting from religious beliefs and practices in this study such as wearing the wedding ring for English staff and wearing a jibab for some nurses and parents in both Thailand and England. In addition, a Kara Sikh bangle, a steel *bangle*, worn on the right wrist, is allowed for the religious reason in Sikh nurses in England. These affect proper hand hygiene compliance as a result.

Regarding wedding styles in Thailand and England as described in the literature reviewed, the wedding ring is the symbol of marriage in Christianity while this is not necessary in Buddhism. As shown in the findings, nurses in England were allowed to wear their plain rings during practice whilst this was prohibited in Thailand. This supports Snow (2008) who argued that British nurses who are married are allowed to wear their plain ring during practice, except those staff working in the theatre room (Snow 2008). According to Hautemaniere et al (2010), wearing a wedding ring does not impair hand gel application if hand washing is performed properly. This means that hand washing has to be particularly thorough to ensure the hands are free from germs. However, this issue seems to be neglected during hand-washing, as during the observations nurses did not pay more attention to removing the wedding ring or washing their hands than expected. If there are some harmful micro-organism left on the hands it can harm patients.

Currently, there are many debates regarding wedding rings on the effect of hand washing. According to 'Bare Below the Elbow', a staff dress code in the UK, the intention of this policy is to remove jewellery such as watches and rings which compromise hand washing (Palazzo 2010). However, bare below the elbow raised problems for female Muslim hospital staff who are supposed to keep their arms covered (Bigger 2006; Petre 2010). As Muslim nurses are allowed to wear a jibab, a floor length tunic with $\frac{3}{4}$ length sleeves and accompanying head scarf, this can be seen both in England and the Southern part of Thailand where the Muslim minority is largely concentrated. Disposable over sleeves are available to overcome this concern. This issue is still being discussed in hospitals as it may discriminate on religious grounds. According to this study, it can be seen wearing jibab affects hand hygiene practice both in healthcare staff and parents. These findings support Allegranzi (2009), who found that religion and culture strongly influence hand hygiene compliance in staff and this potentially affects compliance with best practice (Allegranzi 2009).

In relation to lifestyle, different lifestyles between England and Thailand may influence different IC practices. As can be seen in the findings, Thai and English parents perform different behaviour when they visit their child in the hospital such as kissing, sleeping next to their child and allowing their child to lie on the floor. These will be discussed in turn.

In relation to family structures, according to the literature, most family units in England are nuclear families, with three or four people in the family (Households in the UK 2006), although the Office for National Statistics shows that 24% of families are now single parent families (Griesbach 2003; Gente 2001; NSO 2007; Barnett 2007). Meanwhile, family units in Thailand are larger, usually including extended family members, except in the large cities (MOPH 2007). This leads to some difficulties for IC practice when a Thai child is admitted to hospital. As can be seen from the findings, many visitors were involved, including parents, siblings and other relatives, and it is difficult to ensure they all do the same things such as proper hand washing. Meanwhile, I usually only saw one parent per patient during observation in native English families, and there were two or three cases surrounded with a few relatives in Asian families.

According to this study, Thailand and England have different visitor screening policies. It was apparent that the Thai hospital, particularly the neonatal wards, has a stricter policy than the English hospital. Only a mother or a lady is allowed to stay overnight with a patient whilst there is no limitation in the English hospital. Only parents were allowed to visit patients in intensive care unit in Thailand (however, relatives were allowed access in the general ward), whilst there is no limit in England, In addition, children under 12 were not allowed to visit the patient - even siblings -whilst there is no limitation of age and siblings on visiting patients in the English hospital.

In relation to this issue, the nurses in Thailand explained that parents are more concerned and aware than relatives and visitors, thus parents have first priority

to visit the patient. In addition, there have been some problems between the different genders of parents in the unit, so only mothers were allowed to stay overnight with the patient. Moreover, children over 12 are likely to transmit pathogens from and to the patient because they are difficult to control and less likely to comply with IC practice, so in order to prevent cross infection between hosts, they were not allowed access to the patient's unit. However, even if only adult visitors were allowed access, some barriers to IC practice were seen in the general ward in Thai hospitals. For example, certain visitors come into contact with other patients who are not their relatives, without hand hygiene compliance, which may encourage cross-infection between patients and visitors as a result.

Posfay-Barbe (2008) argued that visitor policies differ between hospitals, depending on various factors such as severe understaffing, Brady (2005) argued that allowing additional visitors per patient should be based on the balancing of benefit and risk of exposure as visitors may transmit pathogens to patients. Certain hospitals have a policy to screen for contagious diseases before visit the patient, particularly before access to intensive care units and low resistant patients (Posfay-Barbe 2008; Brady 2006). In addition visitors should comply with hand hygiene appropriately before contact with the patient, visitors should not have contact with other non-related patients on the ward, and visitors should not handle the patient care equipment because children in an intensive care unit are more vulnerable than those in a general ward (Brady 2005). However, I did not see parents being made aware of this policy although there is a leaflet provided for hand hygiene both in Thailand and England.

In relation to greeting styles, according to the literature reviewed, Thai and English people have different forms of greetings which may affect the transfer of infections. In Thailand the common form of greeting is the "Wai" or "Sawasdee". It is customary for a younger person to be the first to express the "Wai" rather than physical contact. In England, most parents and relatives kiss each other when they meet. In the study, it seems to be very difficult to stop this greeting in

England even though a child is admitted to the hospital. As I saw in England, parents arrived to visit the patient and most of them immediately kissed their child even if the child was admitted to the ICU; this does not happen in Thailand. This physical contact could impact on IC practice as a result because there are various studies showing that MRSA can colonize both the nose and the throat of staff and chronically ill patients (Weston 2008; Bhalla 2007).

In summary, according to the findings, it can be seen that different cultures between Thailand and England may influence different IC practices. Lifestyles are developed in relation to culture. Different lifestyles can also impact on health problems and IC practices such as family unit, greeting styles, and marital status. However, in this study, according to the observation, even Muslim parents performed hand washing differently, some paid more attention than others. In addition, some healthcare staff wearing wedding rings also performs hand washing in different ways. This can support the argument that individual attitudes, beliefs and values have a greater influence on IC practice than culture.

5.3 Personal values, attitudes and beliefs

Berry et al 2004 described that the individual developed after the childbirth throughout the lifespan. Eagly and Chaiken (1998) defined attitudes as groups of beliefs focused around a subject which predispose a particular behaviour. This links to Kallgren and Wood (1986) who described the individual as including attitudes, beliefs, and values which can influence decision making and personal behaviour (Kallgren and Wood 1986).

According to the findings chapter, it can be seen that parents' attitudes and values are as important as attitudes, values and beliefs of hospital staff to IC practice in paediatric wards. These personal issues will be discussed separately.

5.3.1 Healthcare staff's attitudes, beliefs and values

Attitudes, beliefs and values of healthcare staff are extremely important in IC practice. As can be seen in the findings chapter, lack of awareness, poor attitudes, and poor values can contribute to poor practice and inconsistency of practice whilst good attitudes can promote good IC practice.

In relation to poor attitudes and lack of awareness influencing poor practices, during observation, it was apparent that in both the Thai and English hospitals there are hand hygiene posters everywhere, particularly over sinks, but only a few nurses and staff followed the guidelines and wash their hands correctly. Of those who wore a ring, I did not see them pay attention to removing and cleaning under it. Fingernails were not kept short by most nurses in both countries. In addition, apparently compliance affected by attitude was also identified in interview in both Thai nurses and English nurses. For example, the major reasons to hand hygiene compliance appeared to be those intrinsic to the healthcare practice such as feeling rushed and remembering to do so.

The overall findings reveal that attitudes of nurses and healthcare staff are associated with compliance and non-compliance of the IC guidelines. This finding supported several studies in social sciences. For example, Watkins et al (2006) found that perceptions of IC practices among health professionals affected staff compliance with recommended protocols. They also found that the individuals are important factors determining clinicians' levels of compliance. Similarly, Borg (2009) found that several complex behaviours were involved for hand hygiene compliance, and Pyne et al (2010) argued that personal attitudes can affect hand hygiene compliance in physicians.

Regarding the consistency of IC compliance, it was revealed that Gloves were worn inconsistently due to differences in personal responsibility in Thailand whilst gloves were worn consistently in England. Some nurses perform hand washing consistently but some nurses do not. Alcohol gel was applied

inconsistency in both Thai and English staff. According to the literature reviewed, there is no published research in either English or Thai regarding consistency in IC compliance. There is only a study of consistency compliance toward cultures. Recently, Petrova et al (2007) studied consistency-based compliance across individualism culture (the USA) and collectivism culture (Asian nations). They found that the individualism was stronger consistently toward compliance than the collectivism, and the stronger should be the effect of past personal commitments on future compliance. According to this study, this finding is not supported in regard to consistency of compliance even though it appeared that Thai nurses worn gloves inconsistently whilst English nurse worn gloves consistently. This is because the policy of glove use in Thailand is different in England. For example, nurses can consider using disposable gloves as soon as they think an intervention is high risk for cross infections owing to the limited resources in Thai hospital. Meanwhile resources are not limited in an English hospital.

In relation to good attitude influencing good practices, as Dempsey (2009) argued, good attitudes, values and beliefs promote good practices, and negative attitudes, values and beliefs could develop poor practice in healthcare settings (Dempsey 2009). However, in this study, it was illustrated that good attitudes do not always predict proper IC practice. Only nurses and staff who have both good attitudes and experiences in IC practice are positively influencing good practices. For example, some nurses in Thailand and England, such as the link nurses, who were highly concerned about IC practices, practiced better techniques of hand washing and more consistently than other staff. This finding supported Yuan (2009), who studied perceptions of hand hygiene practice in China argued positive attitudes and sufficient knowledge of hand hygiene technique can increase rates of proper hand hygiene practices. Apparently, it can be seen that personal attitudes, values and beliefs are powerful factors influencing compliance and non-compliance of IC guidelines in healthcare staff in both Thailand and England because they could affect personal behaviours in healthcare staff. These may be difficult obstacles to

successfully address because in the interview, the majority of nurses, from both countries, only gave me the standard practices and told me that they forgot to comply with the guidelines or had no more time to comply with the guidelines properly. Additional reasons for lack of compliance are lacking of hand hygiene gel, too hot water, too cold water and cracked skin. This contradicts what I have seen during observation; for example, nurses had a plenty of time to wash their hands whilst I was observing.

According to these findings, the relationship between attitudes, beliefs and values of healthcare staff and IC practices were explained by the individual development theory, social behaviour theory and consistency theory.

Individual development can be considered as the consequence of interactions between the biological organism and environment influences. Regarding the individual's development, it is clear that individuals are different depending on the biological organism and environment influences. This can support the reasons why some staff are better at doing certain things than others, and why some nurses make better decisions than others in this study. In addition, According to table 2, a discussion of values, attitudes and moods by Arnold (2005) is useful to explain why attitudes do not always predict behaviour at work. For example, in this study, a nurse who may have negative attitudes toward his or her job or colleagues still helps others because he or she places high value on being responsible and cooperative.

According to consistency theory, Festinger (1957) and Heider (1958) explained that value, beliefs and attitudes all support one another and are also supported by external situations. If these individuals are balancing, they will have a comfortable state of affairs. In contrast, the discomfort of cognitive dissonance establishes when things are out of alignment, which leads people to try to reach a maximum practical level of consistency in their world. This theory can explain why nurses choose to comply or not to comply with the IC guidelines in this study. If there is imbalance of value, beliefs and attitudes, the nurses might be

faced with conflict and feel discomfort, and they might implement the IC guidelines inconsistently. The discomfort may establish when the nurses do something different from the peers and society. For example, it can be seen that most nurses in both Thailand and England comply with hand hygiene inconsistently because they think it is not serious problem and also when time is short. This means the nurses have a comfortable state of affairs when they did not perform hand hygiene sometimes. As soon as they feel that this behaviour will be unacceptable from the groups they are more likely to comply. This also links to social behaviour and social influence theory with regard to the compliance issue.

Social behaviour obviously links to the particular socio-cultural context in which people develop. Therefore, these also depend on cultural transmission. For example, the key factors influencing children's behaviours are parents, peers, other adults and society. This can be seen in the study where some behaviours are different in Thai people and English people, such as the value of individualism and collectivism. For example, British nurses appear to work more individually than Thai nurses, and British parents appeared to not speak with other parents. This also supported to Hofsted (1985) who studied a large scale of values from different group of social behaviour across forty countries by using an individualism scale, and found that most of the western industrialized countries are in the individualism while most of the third world countries are collectivism. There is also a positive correlation between economic wealth and individualism (Shiraev and Levy 2010). These different values between Thai and English people may contribute to relationships between staff and parents and will be discussed in further details and samples later.

In terms of healthcare staff behaviours, peers and organisation are key influencing factors. This can be explained by the social influence theory which is the effort on the part of an individual to modify the behaviour or attitudes of one or more people. Social influence theory comprises components which include conformity, compliance and obedience which obviously influence personal

behaviour (ShiraeV and Levy 2010). These social influences will be discussed in turn as follows.

Regarding conformity, norms are rules of the particular group indicating how the members should behave. It can influence people to change their attitudes or behaviour to adhere to a social norm or a group. For example, within the study, nurses comply with IC guidelines because it is the majority's agreement and they want to remain in their good graces. When conformity is inspired by a reward or avoiding punishment, it is known as compliance. In other words, compliance is when an individual does something that he or she is asked to do by another, and occurs when a person simply follows orders. Apparently, compliance is analogous to conformity, which could be motivated by a desire to achieve reward or avoid punishment, and it is difficult to identify which behaviour is support conformity or compliance if individuals do not honestly give the reason for those behaviours.

According to conformity and compliance, it can be explained in the study that someone who has poor attitude might follow the rules properly because he or she has a high value of working with regard to 'conformity', or he or she may comply because of social pressure or social punishment with regard to 'compliance'. For example, it can be clearly seen that when nurses both in Thailand and England were aware that someone was observing them, they tried to wash their hands carefully, but when they were free from observation, the hands were not properly decontaminated. This also supported to Arnold (2005) who identified that the thought of social punishment may cause a nurse to comply even when she or he really does not intend to.

In addition, seemingly, social conformity varies across cultures based upon ecological and cultural factors (Berry 2006). For example, in low individualism countries, conformity is popular and autonomy less so (Berry et al 1992). John Berry, who proposed that conformity was likely to be different across cultures, also found that the loose form of organisation and socialisation for assertion,

would present lower levels of conformity than those agricultural societies (Berry 2006). Similarly, Bond and Smith (1996) found that conformity was higher in societies which held the values of collectivism, conservatism and a choice for status ascription, whilst it was lower in the societies which held the values of individualism, autonomy and status achievement. Matsuda (1985) found that collectivism is likely to exhibit conformity while individualism should not.

According to the cross cultural studies described above, they can support some findings in this study. As I have seen, the majority of Thai nurses helped each other when they were working, whilst English nurses appeared to focus individually on their assignment. When a new practice guideline was introduced during observation in the ward both in England and Thailand, I have seen that English nurse were less conforming than Thai nurses. Then I asked the nurses to express their opinion on how their colleagues conform in regard to the IC guideline, the English nurses replied that they have seen their colleagues were also less conforming in this guideline. However, there are different nationalities of healthcare staff in the English hospital where I conducted the research. It was apparent that native English nurses are much less conforming than other nationalities, including Indian nurses, Philippines and African nurses. These findings are illustrated that conforming behaviour are depending on the development of individual rather than the social norm.

Regarding obedience, it is a form of conformity when staff simply follows orders given by other staff. It is different from compliance in that obedience is obeying a request from someone who has power or authority (Shiraev and Levy 2010), such as a command without choices or agreement from employer. Milgram (1983) described that there is no choice in obedience, whilst you have some choice in compliance. Seemingly, if staff oppose or ignore the IC guidelines, it could have a negative result in their job or their position.

Within this issue, Shiraev and Levy (2007) argued that rates of obedience in countries with high power distance are higher than in countries with low power

distance. A power distance means the extent to which inequality between staff in an organisation is perceived, and the power distance index is high when a member of staff accepts that power in that organisation is distributed unequally. Meanwhile, the power index is low when people in an organisation are treated equally (Hofstede 1985). Hofstede (1985) studied the organisation values from 53 countries and classified value dimensions into four dimensions: power distance, uncertainty avoidance, individualism, masculinity, and femininity. According to Hofstede's study, the British are closed on 'the large power distance and uncertainty avoidance within masculinity values as well as on individualism, whilst Thailand falls into the large power distance, string uncertainty avoidance and collectivism within masculinity values (Hofstede 1985).

These studies support this research with regards to why nurses tend to obey other people who have higher power. In addition, the majority of nurses avoid reminding doctors who are in a higher position of authority in both Thailand and England except for experienced nurses or link nurses. However, in terms of individualism, the English nurses appeared to be more assertive about reminding other staff than the Thai nurses. This is because they worked individually and if there is something wrong with their patients, they will be seriously punished by society more so than in Thailand. Thus, the majority of nurses said they have to protect themselves as long as they work with the patient. This supported to Berry (2006) found that regarding social cognition, Western people prefer to make dispositional attribution, while East Asian people prefer to interpret human behaviour from situations.

As discussed, it can be seen that social influence can affect personal attitudes and behaviours in the organisation. As Asch (1966) described, social influence is the behavioural change that one person causes in another, intentionally or unintentionally, for example, it could change the perception of a person in relation to the influencer, other people and society in general. There are additional studies which reveal that attitudes can be changed by several factors.

Arnold (2005) argued that attitudes can be changed through persuasion. Persuasion is a form of process whereby one person attempts to change another towards the adoption of an idea, attitude, or action (Arnold 2005). There are various kind of persuasion such as mode and reward. It can be seen in this study that certain nurses were inspired by a good senior nurse in Thailand. This also supported to Snow (2006), who found that role models can change an individual's attitude. In addition, it was apparent that the use of private reminding letters between colleagues in an intensive care unit in Thailand can improve hand hygiene compliance and other IC practices. This also supports Pyne's (2010) suggestion that several reminders such as visual reminders (i.e. sign and poster) and peer-to-peer hospital staff feedback may improve hand hygiene in physicians.

In addition, Michie et al (2005) also found that there are twelve domains associated with behavioural change: 1) knowledge, 2) skills, 3) social/professional role and identity, 4) beliefs about capabilities, 5) belief about consequences, 6) motivation and goals, 7) memory, attention and decision processes, 8) environment context and resources, 9) social influences, 10) emotion regulation, 11) behavioural regulation, and 12) nature of behaviour. McFarlin and colleagues (2008) observed nurses and staff in the clinical setting, and found that there was less than 50% compliance with proper hand hygiene amongst the staff. They tried to incorporate an educational approach to hand hygiene emphasizing three underlying themes of activity, involving the staff in the learning process, making learning fun, and rewarding positive behavioural changes. As a result, hand hygiene compliance was increased to 86%. These findings support this study with regard to the use of reward. As can be seen staff in the intensive care unit in Thailand were announced on the IC board by voting from colleagues, and it can influence staff to increase compliance.

The theories described above can support this study in explaining how the individual is an important factor in promoting compliance and noncompliance in IC Practice. As can be seen, the majority of non-compliance with the IC guidelines relates to personal responsibility and behaviour toward attitudes,

beliefs and values, which are developed from insight. Therefore, good attitudes and values could be an advantage for IC practice, whilst poor attitudes could result in many difficulties depending on personal awareness, social behaviours and social influences. For example, if healthcare staff have high personal awareness or responsibility, they will remind themselves to wash their hands, and consistently comply with hand washing.

5.3.2 Parents' attitudes, beliefs and values

There is limited information from parents because they were not involved in interviewing. The information was drawn through nurses' experiences from interview and observation. However, in observation, it is revealed that attitudes, beliefs and values of parents are also important to IC practices, particularly in paediatric nursing. Positive attitudes, beliefs and values of parents influence good practice whilst negative attitudes, beliefs and values of parents results in poor practice.

Within attitudes, beliefs and values of parents, there are differences between Thai and English parents. During observation, a mother was observed allowing her child lying down on the floor in an English hospital, and some parents sleep on the patients' bed. Nurses told these parents that these behaviours could pass germs to their child, but despite this it appears that parents still lack awareness. Thus, on these occasions parents prefer not to comply with nurses' advice.

The development of individuals, social behaviour and social influences as previously discussed can explain differences in attitudes, values and beliefs in Thai and English parents. Cultural transmission is also a part of environment which is a key factor influencing personal behaviour (Cavalli-Sforza and Feldman 1981). As observed in the study, Thai parents appeared to be less assertive in complaining to healthcare staff. Meanwhile, English parents who had poor confidence in the healthcare service appeared to make complaints. In

addition, Thai parents are more likely to follow advice from nurses. This supported the conformity in social influences theory described by Michie and colleagues (2005), which explains how social behaviours and social influences can contribute to personal behaviour.

In terms of social behaviour and social influence theory, according to observation, parents appeared to perceive that IC guidelines are important to prevent infection for their child. However, in relation to the compliance of parents, apparently there is less organisational pressure such as staff punishment, and there is no power distance between staff and parents. For example, there is no punishment from the hospital if the parents do not wash their hands before contact their child. Thus, compliance and non-compliance depends on parents' perception, conflict, comfort and discomfort. The parents described earlier parents did not move their child back to his bed because they may think this is not an important factor contributing to infection, or they may feel discomfort in moving their child back to bed. This finding also supported (Shirayev and Levy 2007) which argues that if someone is poor, desperate and depressed, then convincing from others might force them to comply.

Personal conflict and discomfort may occur when there is no correlation between attitudes, beliefs and values (Festinger 1957; Heider 1958 and Arnold 2005). Meanwhile interpersonal conflict arises when there are differences in thought or disagreement of these thoughts (Ayas 2009). There are two types of conflict situations, non-threatening and threatening (Maslow 1943). There are three main solutions regarding interpersonal conflict, "cooperation with the other"; "reign over the other or behave aggressively"; and "avoid the other and the relationship" (Lulofs and Cahn 2000; Ayas 2009). According to the development of conflict and solution, this may support the idea that parents experience conflict in IC guidelines because nobody informed them, and they may feel uncomfortable in following the IC guideline, and eventually might ask for further information or oppose a nurse's suggestion, or make a complaint as can be seen in the study. In contrast, if interpersonal attitudes and beliefs are

balanced, parents may have good attitudes to the IC guidelines, and then they may follow the IC guidelines without opposition. As can be seen in the study, some parents have good hand hygiene before they had contact with their child.

However, according to the findings, most informed parents in both countries who have positive experiences and attitudes with health services appeared to follow the IC guidelines, such as hand washing properly before and after contact with their child. For example, An English mother preferred to use a mask before contact with her child because she had flu; a Thai mother bound her hair properly before accessing the intensive care unit after she realised that it can pass germs to her child. Furthermore, good attitudes, values and beliefs are not only positively related to their experiences, but they also related to parents' knowledge as can be seen in this study. For example, it can be seen in Thailand that lack of knowledge may lead children to miss standard vaccinations. This case can attribute lack of awareness to parents' uneducated attitudes and beliefs.

According to these findings, it can be inferred that lack of information may contribute to lack of awareness and poor attitudes in parents or guardians, and could affect IC practice as a result. Downs et al (2008) found that if healthcare staff are not concerned regarding parents' specific information needs, the opportunities for education may be missed. In addition, O'Connell and Landers (2008), and Andrews (2010), who studied caring behaviour between nurses and relatives in a critical care unit, argued that if parents or visitors are not aware about contamination and cleanliness and therefore do not follow hand hygiene guideline, they may allow infections to be transferred from them to their child or from their child to other children. In contrast, positive experience and adequate knowledge of IC practice are important to encourage good attitude and better practice in parents. Michie et al (2005) found that knowledge and skills can influence personal attitudes and behaviours, and Reiter et al (2009) found parents' beliefs correlated with HPV vaccine acceptability. This will be further discussed in educational section.

Overall, personal attitudes, beliefs and values are the most difficult of all factors which influence non-compliance IC protocol both parents and healthcare staff within this study. As can be seen, the major reasons for non-compliance previously discussed were associated with personal behaviours, beliefs and attitudes. There are differences between what practice has been carried out and what practice has been taught, revealed in the study. This is because personal behaviour is influenced by various factors including the individuals' experiences and social influences. The individual also relates to cultures, in which attitudes, beliefs and values are the product of religion, and also links to an individuals' decision making during practice. As Fu (2007) described, cultures, attitudes, social networks and quality of life are significantly related to each other. Culture and decision-making will be discussed later in relation to country specification, knowledge and experience of IC practice.

5.4 Nursing roles and relationships

Prevention and control of HCAIs in the hospital is everyone's business, particularly nurses who are the most frequently in contact with the patient for the whole shift. In this study, it can be seen that the role of nurse is an important factor which can influence different IC practice between Thailand and England. Different roles, working styles and teamwork between Thailand and England may influence different relationships among staff, patients and parents, and therefore may affect IC practices. These will be discussed in turn.

5.4.1 Role of nurses and healthcare staff

“Social roles are a set of behaviours that individuals occupying specific positions within a group are expected to perform.”

(Shirayev and Levy 2007)

According to the findings, it is clear that different duties were undertaken by nurses in each country. The role of the nurse in England was more focussed than the nurses in Thailand who undertook a wider range of duties. For

example, Thai nurses inserted cannulae, prepared *total parenteral nutrition*, suctioned patients and even played with children, while in England these clinical practices were carried out by doctors, specialist nurses, physiotherapists and play therapists respectively. Thai nurses also appeared to spend more time supervising students. Combined with higher patient to nurse ratios (Thai nurses have more patients), the Thai nurses appeared to have a more extensive workload.

Different nursing roles in Thailand and England may influence different practices, and may affect IC practices as a result. According to the observation, workloads resulted in lack of time to implement effective IC practices such as proper hand hygiene, particularly for nurses working in ICUs both in Thailand and England. Meanwhile, nurses in general wards appear to have more time than the nurses in intensive care unit. As mentioned above that Thai nurses appear to undertake a wider range of duties than the English nurses. Therefore, the Thai nurses probably are less likely to comply with proper IC practice due to lack of time. This can lead to decreased patient safety as a result. This is supported by Berland (2009) who found that a busy and stressful work environment can also lead to problems such as poor hand hygiene and failure to comply the established IC protocol (Berland et al 2009). Griffiths et al (2009) who argued that rates of infection have been linked to workload.

This study found no difference in hand hygiene compliance between hospital staff in England and Thailand. There was also little difference in HCAI rates between both countries, with England having an HCAI rate of 8.2% and Thailand having an HCAI rate of 6.5% (Danchaivijitr 2007, Humphreys et al 2008), The literature states that hand hygiene compliance is reduced when there is an increased workload (Berland 2009, Griffith 2009). However, in this study the nurses in Thailand had heavier workloads than the English nurses and yet still performed hand hygiene as well as English nurses. Therefore, this thesis does not support the previous literature. This may be because the differences between Thai and English nurses are due to personal attitudes,

values and awareness; these play an important role in influencing IC practice rather than the load of duties

However, within this study, load of work and duties may affect stress and turnover of nurses in the Thai intensive care unit. This supported by the previous study, and Hayes et al (2006) reported that nurse turnover influences patient and nurse outcomes. In addition, Arnold (2005) also found that long hours of work and load of work have clear negative psychological and behavioural effects on the worker, and in addition to shift work (particularly working night shift), lead to greater exhaustion and sense of depersonalisation. This may affect IC practice as a result in terms of lack of staff.

This finding regarding the activities undertaken by nurses is also explained by role theory and responsibility, identified by Berry. As Berry et al (2004) described, a person occupies a position for which certain behaviours are expected in every society. These behaviours are called roles, such as the roles of students and the role of nurses. Each character occupant is the intent of sanctions that exert social influence, even pressure, to behave according to social norms or standards (Berry et al 2004). Responsibility is the state of being responsible for a trust or obligation and can influence organisational role stress (Arnold 2005). As long as a person's role is clearly indentified and understood within the organisation, it can prevent stress in the workplace. In other words, the ambiguity and conflict of role can promote low job satisfaction, low motivation and depression as a result (Arnold 2005).

A group can set a sanction both positive and negative sanction to organize individuals within group (Shiraev and Levy 2007). For example, negative sanction would apply to those who do not comply with IC protocol or a verbal appreciation for those who do comply. This procedure is useful in the collectivism cultures where there are stronger systems of sanction and rewards than individualist cultures (Shiraev and Levy 2007). In this study, it appeared that positive sanctions, such as giving the reward, were applied to encourage

the Thai staff more than in English hospitals where the culture is individualist. Thai nurses also told me that the positive sanction not only influences the staff to adhere with the IC guidelines but sometimes also decreases the rate of staff turnover.

5.4.2 Working styles, relationship and teamwork of Healthcare staff

This study revealed that working styles and teamwork also influence different IC practice in Thailand and England. Autonomy is higher in English nurses than Thai nurses. Different working styles influences relationships between healthcare staff and also affects IC practice.

According to the finding, it appeared that the English nurses were more autonomous than Thai nurses. They also work separately with other healthcare staff. For example, Thai nurses have a joint ward round with doctors whilst in England nurses and doctors have separate ward rounds. The Thai nurse and physician also discuss a patient's problem together whilst this had not been seen in the English hospital. This was confirmed by the English nurses participating in interviews: they will speak with the doctor only when the doctors asked for further information about patients. According to observation, it appeared that Thai staff also shared the stress and personal problems with in-group, colleagues or the same groups, more than amongst English staff. This finding is supported by Hofstede and Bond (1984) who argues that people in collectivist cultures will participate more intensely and frequently with in-group members than will individualist cultures. Shiraev and Levy (2007) who reviewed helping behaviour across cultures, found that helping behaviour is positively related to a country's economic productivity. This means the higher productivity, the less helping behaviour occurs.

Regarding working styles, the barrier between professional groups and other staff appeared to be greater in England than Thailand. As can be seen healthcare staff in Thailand and England differ in terms of education, earning

and lifestyles. In Thailand, where nursing has been taught at degree level for a long time, both nurses and doctors are considered to be professionals. Meanwhile English nurses were not treated with the same level of respect as English medical staff. This lower status may be influenced by the perception that most nurses, until recently, completed diplomas rather than degrees. This supports Wolf's study which found that status barriers among healthcare professionals are reinforced by different education, earning and life styles (Wolf 2006). In addition, Lipskey (1980) argued that increasing conflict over interaction between low-level workers and managers can result in compliance in street level bureaucrats.

However, Thai nurses and English nurses are recognised in different levels of power from both cultures. As discussed previously, Both England and Thailand have a large power distance (Hofstede 1985) which means the members of staff accept that power in that organisation is distributed unequally. This finding is also explained by Aronson's social cognition theory (1995), which argues that cultural attributes (social cognition) may influence social interaction in a wide variety of conditions. The differences of hierarchy and social status may contribute to the different relationships between nurses and doctors in both countries.

According to working styles described above, it appeared that Thai staff take greater effort to maintain group harmony than do English staff. This is because Thai and English staff are different with regard to sociocultural context, and this may influence better teamwork and relationships between healthcare staff as a result. This finding is supported by Manias and Street (2001), who suggested that doing ward rounds together can promote participation between nurses and doctors, and could enhance participation by nurses. In contrast, different attitudes beliefs and values could eventually affect collaboration between people. As patient care is shared among doctors, nurses and other staff, poor teamwork may compromise patient safety. This is supported by Powell (2006) who argued that better teamwork can promote patient safety, or as Wolf (2006)

described; transforming the doctors-nurses-game can improve patient safety. Shuldham et al (2009) argued that the relationship between nurses and staff can effectively promote patient outcomes.

Moreover, according to the findings, more self-confidence was seen in English nurses than in Thai nurses. This relates to Mann et al (1998) who argued that the majority of those in developed countries express more confidence in coping with problems than the collectivism countries. Hofstede (1980) argued that individualism cultures have a high uncertainty avoidance which means they tend to express emotions more frequently, have a stronger desire for group consensus, and are less tolerant of those who are different (Hofstede 1980). Similarly, Berry (2006) found that English-speaking countries are intermediate on secular and high on self-expression values whilst south Asia are low on both values.

In addition, the principles of “Krieng Jai” and “respect elders” might explain why Thai nurses avoid having arguments with others, particularly healthcare staff, who are older or in a higher position. As was seen, nurses usually avoid arguments with doctors and older staff regarding hand hygiene practice, except for something that may immediately threaten the patients’ life; they expressed feeling less confident in reminding them because they are younger. Meanwhile, English nurses respond to colleagues quickly when they feel discomfort with something, and apparently, nurses in England have greater confidence in reminding doctors than Thai nurses when compared to the same level or the same age. As can be seen the inexperienced nurses in Thailand have asked an experienced nurse to speak to the doctors. However, failing to remind doctors to perform hand hygiene were seen similarly both in Thailand and England. This is due to knowledge and experience of staff and will be further discussed later.

Lack of assertiveness and “Krieng Jai”, can contribute to lack of clarity while high assertiveness induces clarity. Lack of clarity can contribute to poor practice as a result. Mill and Clark (1982) described social relationships in the collectivist

culture as communal, whilst exchange relationships can be seen in the individualist culture. The one distinction of exchange relationships is clarity (Mill and Clark 1982). This also linked to the previous discussion regarding personal discomfort and comfort. The more the individual is unclear, the more discomfort the individual feels, and the individual may be less compliant with proper IC practices as a result.

Wolf (2006) also suggested that there are several strategies to improve communication among healthcare professionals such as humour. Lipsky (1980) suggested that compromise in work habits and attitudes between low-level workers and managers is helpful for implementation in workers. This is because both low-level workers and managers have different interests. This explains why humour was used to communicate amongst healthcare staff in both Thailand and England.

5.4.3 Relationship among healthcare staff, patients and parents

According to the findings, relationship among patients, parents and staff are different. Patients and parents in England appeared to be more assertive and were more willing to complain than patients and parents in Thailand. Thai parents appear to begin relationships with others faster than English parents, and Thai parents appear to have greater respect of healthcare staff than English parents.

In relation to assertiveness, as can be seen, English parents watch nurses when they were performing nursing care, are assertive enough to ask questions, and suddenly respond or complain if there are irregular interventions. Meanwhile, I rarely saw this in the Thai parents. According to the interview, some nurses said sometimes parents are unclear about the information, but they feel “Kreng jai”, thus they have to encourage them to ask questions and check that hand-washing is clearly understood by demonstrating it. However, if the nurses have a lack of awareness, some parents could perform poor hand

hygiene technique. According to this finding, lack of assertiveness in Thai parents may result in lack of clarity in IC practice, and may contribute to poor practice as a result.

In addition, nurses in England occupy a different status to doctors because of the power distance and social cognition as previously discussed. Meanwhile, relationships between staff and parents were more respected in Thailand not only because of the social cognition, but also because of religious influence. In Buddhism, people mostly have a commitment of being good and will gain a good feedback. They also accept that doctors and nurses are professionals who are dedicated to other people, so nurses are accepted as professional workers just as doctors are. However, the relationship between parents and doctors in both England and Thailand appeared to have some similarities. This supports Szasz and Hollender (1956) who argued that doctors acted in the traditional roles of the doctor patient relationship (Szasz and Hollender 1956). However, whilst these roles were present between parents and nurses in Thailand, the relationship between parents and nurses in England did not subscribe to the traditional doctor patient relationship.

According to the above findings, this due to sociocultural context influencing individual behaviour as previously discussed (Mann et al 1998). It is well known that Thai people avoid conflict due to “Kreng jai” even if they feel uncomfortable (Prado 2007). As Wolf (2006) described, different social lifestyles can influence relationships among people. Thai people are friendly and can make friends quickly, even in the hospital. For example, in Thailand, patient’s visitors had quickly become known to each other, and would visit another bed as soon as the patient was admitted to the ward whilst I rarely saw this in England. Different lifestyles between England and Thailand cultures affected communication between healthcare staff and parents particularly for English nurses. As can be seen nurses in England earned a lower level of respect than doctors, so it was apparent that the parents always keep their eyes on the nurses and are ready to complain as soon as they were unclear about the nursing intervention. In

addition, the parents easily conformed and obeyed as soon as doctors made a request without any arguments and questions, whilst there are lots of questions when nurses made a request. This related to social cognition influencing social interaction as discussed previously (Shiraev and Levy 2007).

In term of relationships between people described above, it can affect IC practice as a result. For example, less respect could impact on lack of collaboration between people, and it can result in misunderstanding in IC guidelines or poor practice. Shared beds and toys between patients may results in a struggle to control cross infection from patient to patient and from patient to visitors. This supports Burnard (2004), who found that the relationship between culture and communication can help to inform practice and cooperation with others. Positive and effective alliances between staff and parents establish interpersonal connections and sustain relationships. In contrast, nurses are probably faced with some difficulties if they do not understand the patient's cultures, and a lack of collaboration with parents, particularly patients from multicultural areas. Söderbäck and Cristensson (2008) suggested that empowering the family to take part in the caring process in a culturally sensitive way is therefore of great importance; this supports the study in explaining why parents are important in IC practice.

Furthermore, according to the findings, lack of communication not only causes lack of knowledge and misunderstanding, but this can also lead to obstacles later such as complaints or arguments. This supports Berry (2004), who found that English speaking countries are intermediate on self-expressive values while South Asia and Africa are low in this value. Similarly. Carroll et al (2005) found that African parents are less likely to complain than white parents. Complaints or arguments finally influence infection control practice toward non-compliance as a result.

I observed that the gap between staff and parents was seen in England more than Thailand. This might be related to different individuals which are a result

from different cultures, religious, lifestyles and social status discussed previously. For example, Buddhists respect elders or professionals, and they always avoid using vulgar words and avoid conflict with each other. In other words, Buddhists realise that being a virtuous person will yield a positive outcome, and that harming others, both physically and emotionally, will yield a negative outcome. This is similar to other religions such as Islam and Christianity. Religious people in both England and Thailand mainly conform to their principles; however, according to my experienced five years in the Church of England more people in Thailand practice their religion than in England.

This supports Jianbin (2003), who argued that there are far fewer differences in the ways people impact on the integrative life style between Buddhism and Christianity.

However, both Thai and English nurses also attempted to make positive relationships and prevent arguments by using a sense of humour, verbal appreciation, and respect between staff previously discussed. Humour can be used to reduce stress when nurses have to remind parents or colleagues to wash their hands before having contact with patients. This technique also supported Cann et al (2008) who argued that appropriate use of humor may support the positive personality qualities contributing to less rigorous stress.

In addition, in Thai cultures staff not only respected patients and visitors just because of the patient's right, but staff also respected parents and visitors because they are older than staff. As can be seen in the findings, healthcare staff usually treat patients and visitors as members of their family, and it could be clearly seen that when nurses showed respect to patients' parents, the parents paid more attention to what nurses told them to do compared to when such respect was not apparent. This was similar both in Thailand and England but there were differences in the ways nurses deal with parents and visitors, depending on customs. For example, Thai staff usually show respect to older people by doing "Wai". Meanwhile, greeting in England is different by

performing a bright “Hello”, when meeting parents; both of these can promote good relationships between parents and staff as a result.

5.5 Education

This study revealed that education and knowledge influence both staff who take care of patients, and patients themselves. Different levels of education result in different practices in both Thailand and England. Trainings and experiences are key factor toward decision making and good practices, as IC practice is everyone’s responsibility. Education is important for everyone toward IC practices. This will be discussed separately in terms of patients, parents and staff.

5.5.1 Patients’ education

According to the findings, it can be seen that the older the child is, the more understanding they have, and it was apparent that there were no significant differences in understanding between Thai patients and English patients in this study.

This issue also supports Livingston and Taylor (1998) who found that knowledge, attitudes and self-care practice are related to age. It depends on how the individual understands the problem they are facing. Adults are better able to learn and understand complicated information than children are. This can be explained by the cognitive theory and child development.

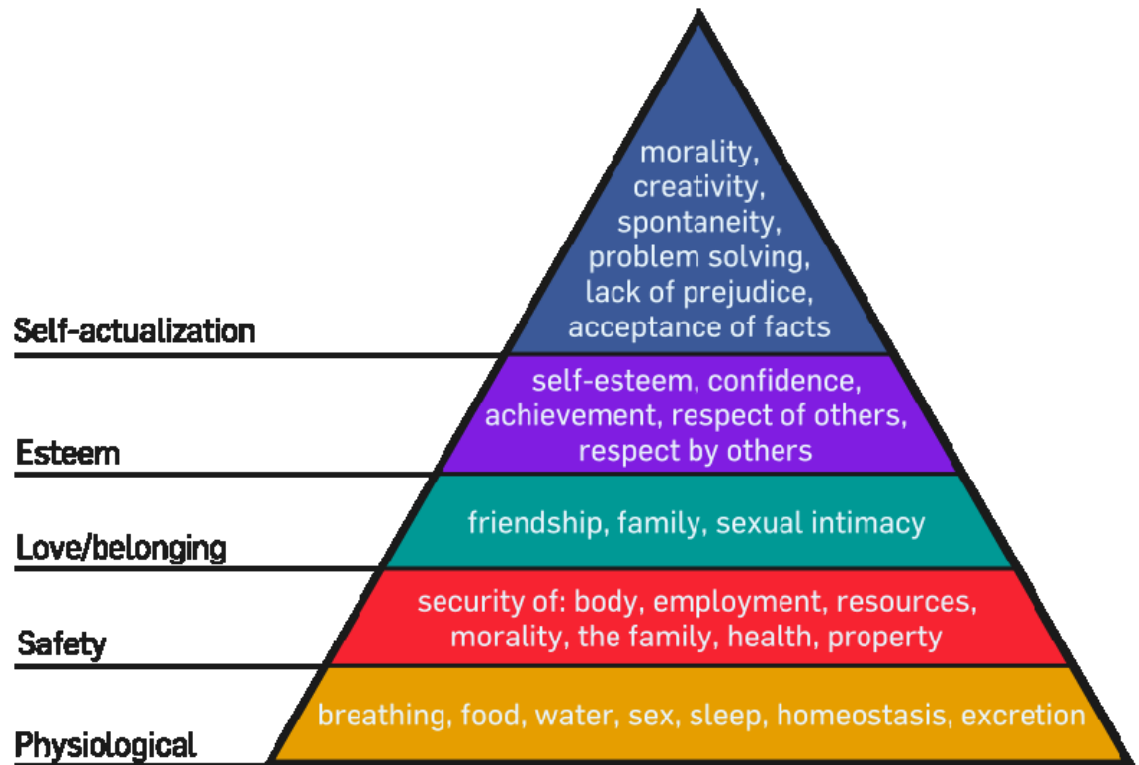
Cognitive theory, known as Piaget's theory, the foremost cognitive thinker, is one of the learning theories regarding the development of the individual’s thought process. Jean Piaget identified the five stages of cognitive development, including stage of sensory-motor thinking, pre-conceptual stage, stage of institutive thought, stage of concrete operation and stage of formal operation (Piaget 1970; Bjorklund 2005). Cognitive development explains how a

child's thoughts are different from adults, and this difference also supports his study's findings of why younger children are not concerned about infection.

According to social learning theory by Bandura, human behaviour is an outcome of continuous mutual interaction between cognitive, behaviour and environmental influences (Bandura 1977). In other words, social learning means people learn others' behaviour and attitudes through observing, imitation and modeling. Children's learning occurs through capturing the surrounding world in which they see themselves and of which they experience (Illeris 2009). A process that results in cognitive, emotional, environmental influences and experiences for enhancing, acquiring or comprehending knowledge, skills and world views is called 'learning', and the process by which people learn is called 'education' (Illeris 2009). This can explain why adults have more advanced thought processes than children, and why there are no significant differences in thought between Thai and English children. This is because the children are too young to be entirely influenced by the culture and environment.

In healthcare services, education and knowledge is essential for patients. As Abbate et al (2008) found, patients' knowledge, attitudes, and behaviour are key factors regarding HCAs. Regarding paediatric patients' knowledge and perceptions, they do not know what kind of infection they have, and who is at risk of infection. As demonstrated in the findings chapter, children did not know how to protect themselves from dangerous microbes. In fact, they only require safety, food, love and fun as can be seen from the findings. This issue also supports the hierarchy of human needs that Maslow described (Maslow 1954) regarding basic needs (Figure 8). Thus, parents or guardians are the key individuals responsible for paediatric patients, particularly when they are extremely young. Lack of understanding and knowledge in parents and guardians could result in lack of concern about children's health.

Figure8 Maslow's Hierarchy of Needs



Source: Maslow, Abraham (1954).

5.5.2 Parents' education

In IC practice, the involvement of parents is a key in paediatric nursing. Family-centred care is adopted as a model of nursing in children in various healthcare settings. Parents' educational background or knowledge is crucial because it impacts on their own perceptions and understanding regarding how to get involved in nursing care, for example how to follow the IC guidelines. According to the interviews with nurses, apparently parents' education level directly affects patients' immunity and food hygiene. Different levels of education and knowledge between Thai parents and English parents were seen in this study.

In relation to the level of education, it may directly affect the individual's intellectual development and self-directed learning. As can be seen from the interviews, different educational backgrounds influence basic knowledge of self-care leading to different self-care implementations such as food hygiene, the quality of eating and health checking. Parents' lack of education is linked to failure in following the IC guidelines properly in both Thai and English parents. Parents who have a higher degree are more likely to seek and ask for the information from the nurses than parents who have lower educational levels. In addition, the parents in both countries who have a higher degree are more likely to understand complicated information. This supports Kuhn (2008) who argued that an effective self-directed inquiry is positively related to level of education.

However, the level of education does not always predict the knowledge of IC practices in this study. According to my observations, when a patient has been admitted, parents will be informed about how to look after their child in both countries. Highly informed parents are likely to have a higher awareness of self-care, and this can be inferred in IC practice as well. For example, parents paid attention to every nursing activity, and this drives the nurses to be more careful when they are undertaking nursing care. This supports Travis (2010), finding that self-care educational teaching significantly increased self-care knowledge among parents in the treatment group. According to the interviews, there is no outstanding difference regarding IC practice compliance between different levels of education, whilst different practice is clearly seen between informed and uninformed parents. However, the nurses should inform parents properly. For example, simple information should be provided for lay people or uneducated parents whilst more complex information can be provided to parents who obtained a higher degree.

This supports learning theory; human behaviours are the reflection of one's knowledge, skills and world views (Bandura 1977). Mislearning or misunderstanding could affect human behaviour as a result. For example, lack of knowledge could result in poor practice and less awareness. As can be

seen, informed parents had a higher level of concern and awareness regarding IC practice than more distant relatives both in Thailand and England. This is because the distant relatives have a lack of information and lack of interest compared with parents. This also relates to Harmsen et al's (2006) study, which reported that lack of knowledge results in lack of awareness and consistency when looking after patients with urinary tract infections.

In addition, different levels of education and knowledge between Thai parents and English parents were seen in this study. As England has better healthcare systems and information technology, English parents have an increased knowledge and higher awareness of child care than Thailand. As can be seen in this study, English parents always follow every episode of nursing that relates to their child. This issue also relates to different cultures and social welfare allocated by Thai and English governments and will be discussed later in section 5.6.1.2.

According to the discussion above, apparently the educational background is influential, but information by healthcare staff is more important. Proper information regarding IC practices is more influential than parents' background. Information for patients is influential to increased self care both in Thailand and England.

5.5.3 Nurses' education

Education and knowledge is not only essential for parents and patients, it is also crucial for staff participating in caring and treatment. According to the findings regarding fundamental knowledge and advanced training in nurses and staff, it was found that nurses' education and knowledge of practice is also a crucial aspect in the prevention and control of HCAs for patients in both Thai and English staff.

In relation to the fundamental knowledge of paediatric nursing, there are differences in the curriculum between Thailand and England. The nursing course in England has a three year curriculum and provides specialist training such as adult nursing and paediatric nursing, whilst the nursing course in Thailand has a four year curriculum and nurses become qualified as both registered nurses (RNs) and midwives, and then undertake additional qualifications in paediatric nursing. According to the findings, there are not many differences in paediatric nursing care between newly qualified English and Thai nurses; patient's health status, children's basic needs, and the nature of children were identified, and supplied with appropriate nursing care.

Paediatric nursing demands that nurses should understand an individual child's needs and the nature of children, which are different from adults. If nurses are not capable of identifying children's problems, it can result in difficulties in IC practices. For example, HCAI pathogens in children differ from adults owing to their immature immune systems, vaccination status, and patients' own status such as congenital disease and abnormality. This makes children more vulnerable than adults, particularly neonates and very young children. If nurses do not recognize this issue, they may fail to separate vulnerable patients from the healthier patients. Patients' health status is the most important intrinsic factor influencing IC practices in children; therefore, it may affect HCAI within the wards as a result.

5.5.4 Infection control Training and experiences

According to this study, training and experiences are important in IC practice and IC development in both England and Thailand. These not only establish knowledge of IC practice, but it also enhances self confidence and personal decision making in staff. However, there are some differences between Thai and English staff identified in this study.

There are no significant differences in fundamental knowledge of paediatric nursing, but it appeared that Thai nurses have greater knowledge of HCAs and IC practices than English nurses. These related to further training in IC practices in Thailand: most nurses are required to undertake additional courses in infection prevention and other courses in order to collect CNEU. If nurses do not collect 50 CNEU in five years, they have to retest the comprehensive exam in eight subjects at the same time to obtain their license. Meanwhile, taking advanced nursing is not compulsory for English nurses. RNs in England must maintain a portfolio to show continued learning, however, these are rarely checked by the Nursing and Midwifery Council.

Thus, there are different ways to enhance knowledge of IC such as short course training, an advanced degree in nursing, and self-directed learning. As can be seen in the findings chapter, update training days were arranged by ICNs in order to inform and train staff regarding overall IC practices such as the basic standard protocol, hand hygiene and relevant issues. Moreover, some nurses participated in advanced training on specific courses that were relevant to their job description. For example, link nurses attended an additional course regarding IC practices, and it is clear that they were more competent than nurses who did not take the advanced course.

Learning by self-directed reading can also improve knowledge but this is dependent on personal interest. As observed in the study, both English and Thai nurses subscribe to a published journal, and they can gain a lot of knowledge from the journal and apply it to their IC practice. Certain studies in the journal were applied in Thai patients in an intensive care unit such as mouth wash during suctioning. This supports Atack and Luke (2008) who reported that online educational courses increased staff perceptions of their own IC competence, while Parahoo (2006) reported that education via posters and distribution of publications did not significantly improve hand hygiene compliance in the emergency department. This was also seen in the study,

whereby despite positioning of posters over hand basins, staff did not follow the guidelines on the poster neither in England nor Thailand.

Apparently, the efficacy of short term training seems to be different from continuous training. As can be seen in the findings, Nurses from both Thailand and England have studied similar fundamental curriculum and have participated in similar update training. However, in order to collect CNEU credits and renew their license every five years, Thai nurses have to participate in additional training or advanced training. This promotes additional knowledge and advances nursing practice, which is eventually beneficial to IC. This supports Panhotra et al (2004) and Danchaivijitr (2005), who reported that continuous learning increased hand hygiene compliance in nurses. Meanwhile, in England nurses are required to provide evidence of an updated portfolio by attending courses or self-directed learning. The majority of English participants said they did not know anyone who was asked to see his or her portfolio, so they just update their profiles by reading and following the basic requirement.

According to the findings, nurses' advanced knowledge and training in practices is also a greater aspect in the improving IC knowledge in the nurses than self-directed learning, particularly in IC practices. For example, nurses who have been trained in advanced nursing are more likely to deal with IC practice than inexperienced nurses. In addition, I noticed both English and Thai nurses who finished their training in advanced nursing are more competent in dealing with doctors and parents than other nurses, even if they have worked for many years in the unit. For example, the participants who are the link nurses were more likely to identify HCAs, discuss issues with doctors, and remind the doctors to comply with hand washing than other, even senior, nurses. However, not many nurses in England in the study took advanced courses in nursing. This also supports the current study, in that improving education strategies in surgeons can prevent HCAs (McHugh et al 2009). Ward (2010) found that education can improve compliance with IC precautions or reduce the rate of infection, particularly in the long term. Lee et al (2009) found that education programmes

can reduce the rate of MRSA infection after 3 months of an education programme.

Lack of IC knowledge could result in several dilemmas in IC practice. As Weston (2008) argued, the major problem relating to the use of protective equipment is a lack of knowledge about the risk of transmission of micro-organisms and inconsistent use of protective equipment, rather than staff having adverse effects from these products. Western's argument also supports this study. For example, in the protocol, gloves are used for two main purposes, preventing the contamination of staff from microbes and organic material such as blood, secretion and excretion, and also preventing micro-organisms transferring to patients during invasive procedures. Masks are used for two main purposes, to prevent the expulsion of respiratory droplets and to protect staff from blood or body fluids. However, sometimes staff cannot decide when it is appropriate to use gloves or other protective equipment.

Moreover, some IC protocols both in Thailand and England are not appropriate for paediatric patients, including intravascular insertion procedures that require changing the cannulae every three days. It is relatively difficult for children to undergo this protocol because children have less tolerance to pain than adults. Thus, children might not easily allow a nurse to insert cannulae. However, as observed, IV cannulae were changed more often than 3 days because paediatric patients frequently move their extremities. Thus, clotting and leaking of IV were frequently found in paediatric patients. In addition, parents were allowed to stay overnight with paediatric patients even when they are admitted to a cubicle room in order to support the child's needs. Toys and plays were organised in the clinical setting to serve children's needs, but they should be cleaned and managed appropriately because there are various studies which show that toys can be a vehicle for germs to patients (Fleming 2006; Naesens et al 2009). Hence, in this study, balancing nursing interventions with existing IC protocols is required for paediatric IC practices.

Lack of knowledge and training also leads to reduced compliance and lack of awareness in staff. In the study, lack of knowledge about the colonization of MRSA was found in English nurses, particularly when I asked them why they did not use a mask during suctioning. This supports Seaton (2006) and Easton (2007), who found that a significant proportion of doctors and staff lacked core knowledge regarding MRSA colonization, infection and management, which may lead to non-compliance of IC guidelines as a result. In addition, as can be seen in the findings, it also shows a lack of awareness, as staff did not stop parents kissing their children even when patients were admitted to the isolation room and intensive care unit. According to Weston (2008) and Bhalla (2007), MRSA can colonize both the nose and the throat of staff and chronically ill patients. This puts the child at risk of cross infection from parents or visitors, particularly when they are very poorly.

Moreover, attitudes and behaviour are apparently linked and related to personal experiences (Kallgren and Wood 1986), and it can be seen in the study that good experiences regarding IC can promote self-confidence and influence staff to follow the guidelines consistently. In contrast, lack of knowledge and education can lead to reduced confidence and inappropriate decision making. As can be seen from the study, experienced nurses have greater knowledge of IC practice than inexperienced nurses. However, as discussed previously, knowledge is of greater importance than experience. The nurses who have both knowledge in IC practice and experiences appear to have a higher level of decision making than the nurses who have only experiences or only IC knowledge. This issue also is also supported by decision-making theory as follows.

Decision-making can be undertaken from a simple level to a complex level; it can be regarded as a cognitive process resulting in problem solving in various ways (Arnold 2005). Several factors are developed during a nursing career that lead to effective decision-making, including self-awareness or personal factors and knowledge (Arnold 2005; Berry et al 2004). In terms of self-awareness, a

person needs to have an accurate appraisal of her or his own strengths and weaknesses, values, likes or dislikes. Meanwhile, knowledge is the result of education and experiences regarding problems or situations which require a decision. For example, if nurses have to make a decision in the workplace, they should have knowledge of caring which is established from experiences and nursing background.

As Banning (2006) found, nurses gain experience of nursing within a specific specialty. According to Arnold (2005) and Berry et al (2004), it can be inferred that experienced nurses have higher competency and are better decision-makers than novices when dealing with other staff. For example, they have more confidence in reminding other staff to comply with hand hygiene before having contact with the patient. This supports Gunnarsson and Stomberg (2009), who studied novice nurses and experienced nurses, and found that the nurses' experience is important for decision-making.

Decision making is extremely important for practitioners because it can contribute to both good and poor practices, depending on individual nurses. As can be seen in this study different nurses establish different nursing care. For example, length of time and technique of hand washing will be determined from the individual and these were presented differently both in Thai and English staff. This finding supports various studies which found that the main reasons for hand hygiene non-compliance links to the decision making of the individual (Collins and Hampton 2005; Ahmed et al 2006; Allegranzi and Pittet 2009). In addition, Beggs and Sleigh (2006) found that strict nurse cohorting can promote hand hygiene effectiveness. In contrast, low adherence to recommendations, lack of awareness, failure to identify which activities require hand hygiene, and scepticism can also influence hand hygiene compliance (Boyce and Pittet 2002; Allegranzi and Pittet 2009).

Moreover, Hancock and Eason (2006) studied the decision-making processes of nurses when extubating patients, using an ethnographic approach. This study

found that cultural, contextual and personal characteristics combined to form a complex process of decision making. Additionally, Fry and Stainton (2005) studied an education framework for triage nursing, finding that decision-making processes interweave with cultural knowledge. The contextual factors also supporting this study include hierarchy, relationships, power, leadership, education, experiences and responsibility. For example, understanding the meaning of the patient group can help nurses to justify and sustain beliefs of efficiency, timeliness and equity. Then these can promote effective decision-making.

According to the discussion above, this confirms that education has a key role in IC practice, including in patients and parents and healthcare staff. This is similar to various studies which have shown that education has a powerful role in the prevention and control of infection (Ward 2010).

5.6 Poverty and wealth

Thailand is a developing country whilst England is a developed country. There are several ways to distinguish between developed and developing countries; such terms as: rich and poor, advanced and backward, high income and low income, and industrial and agricultural may be used. According to the world income map, developed countries are high income countries, with per capita incomes higher than the U.S \$ 12,196. These countries have vast infrastructures, a largely urban population, an educated labour force, and are mostly competent in high tech and sciences. Meanwhile, developing countries are low middle and upper middle income, with per capita incomes ranging in the U.S \$ 996 to 12,195 ranges per year. Some of these countries are growing rapidly, such as Singapore, Korea and Taiwan, whilst some countries still lack sufficient infrastructure and education (World Bank 2011).

According to World Bank classification, England is a wealthy country whilst Thailand is a poor country, and it can be seen in this study that the differences

between geographic background impacts on IC practice between Thailand and England. The different factors influencing IC practice obtained in this study can be separated into four major issues as follows:

- 1) Country specific factors, including public welfare, specific disease and cultures
- 2) Government policies
- 3) Funding and supportive resources
- 4) Guideline and implementation

These will be discussed in turn.

5.6.1 Country specific factors

There are three issues identified within country specific factors within the study. This includes specific disease and public welfare.

5.6.1.1 Specific Disease

In terms of country specific disease, Thailand and England are located in different geography. Thailand is located in a tropical area whilst England is located in a cold climate. There are some microbes that rely on the weather and the environment, such as Avian Flu, Tuberculosis and so on. According to WHO (2010), the pandemic influenza virus are currently active in tropical areas, primarily in the Southeast Asia and in the part of the Caribbean, and as a result Thailand had more concerns about this issue than England, and intensively informed people via the media about infection prevention. Many Thai people had worn the disposable mask in public or crowded areas in that period. This demonstrates that different weather may influence different pathogens, and therefore contributes to different practices as a result.

According to this study there are some differences identified regarding different diseases found in paediatric wards in Thailand and England. For example, Acute Gastroenteritis (AGE) caused by Rotavirus is commonly found in paediatric patients, particularly from 6 months to five years in low income families. Meanwhile, this disease less likely found in England within this age, but there is a small number of diarrhoea from Rotavirus in very young children. This support Keddy (2010) who argued that acute gastrointestinal infection can be caused by various pathogens such as viruses, bacteria, protozoa, helminths and occasionally fungi, but the commonest problem found in children younger than 2 years is caused by Rotavirus. Peak incidence of AGE caused by Rotavirus in the developing world appears to be between six months and one year of age, a younger age incidence than 6 months associated with infection in the developed world. The prevalence in cooler, drier weather shows that the incidence of this disease is relatively restricted to children under the age of two (Keddy 2010).

Moreover, in this study, AGE caused by *V. Cholerae*, bacteria, is commonly found in children after birth to 6 years whilst it is less likely and hardly found in England. According to interviews, the common problems of AGE in Thailand are associated with low levels of hygiene, sanitation, malnutrition and poverty. Flint et al (2005) found that the burden associated with gastroenteritis is food, and Keddy (2010) argued that AGE is widespread in the countries where there is poor hygiene and sanitation. In addition, Donowitz (1988) argued that the burden of gastroenteritis caused by *V. Cholera* is primarily a problem in Asia and Africa, particularly in poverty countries. This supported Zimmerman (2007) who argued that low income can promote difficulties in IC in developing countries.

The level of hygiene in parent may link to lack of education level and knowledge of IC practice as discussed previously. Due to the ways that healthcare staff inform parents, knowledge of IC practice that parents obtained from healthcare staff is greater in influencing compliance than level of education of parents.

However, according to interviews, certain Thai parents, who were informed regarding food hygiene many times, still fed their child with the same food as themselves because of poverty, which meant that their child was recurrently admitted into the hospital for the same problems. Hong et al (2006) found that poverty is a key factor resulting malnutrition in children in Bangladesh.

Moreover, as can be seen in the study, there are many cases of bronchitis in winter in England whilst it is rarely found in Thailand because of the different climate. Differing diseases may lead to different practice regarding the prevention of transference of HCAI within the hospital. For example, England may focus on the prevention of bronchitis during winter rather than AGE, and usually bronchitis patients were admitted into a cubicle room except when the cubicle room was not available; patients with bronchitis would be admitted into the same bay. Meanwhile, bronchitis patients in Thailand were admitted into a cubicle room, but they were admitted in the same space with other patients who had got respiratory infections. This due to the limited number of cubicle rooms; there are only two to three cubicle rooms within the Thai hospital ward.

AGE, can be caused by certain bacteria growing in food can result in diarrhoea, being more prevalent in warm temperature than cold weather. Keddy (2010) found there is a seasonal peak of *V. Cholera* in warm wet summer months and numbers of cases decrease in winter, thus, food hygiene code practices will be strongly focused in Thai hospitals in order to prevent food-borne and water-borne transmission. For example, as can be seen, food in the Thai hospital was cooked freshly every meal, Blenderized diet (BD) was made day by day and was warmed before feeding to the patients whilst food and diet for the critical patient in English hospital are ready to eat nutrition in the closed system, but food for the patients in general wards are sandwiches, toast and some hot food. In addition, in Thailand, hand washing was more common in the unit more than hand cleaning with alcohol based gel, particularly with the gastroenteritis patients, while alcohol-based handrubs were used more often in England. This supported Sickbert-Bennett (2005) who found that alcohol cannot kill spores

such as clostridium difficile, and physical removal with non-antimicrobial soap and tap water alone is effective hand washing for high levels of viral contamination with a non-enveloped virus.

5.6.1.2 Public welfare

According to the literature reviewed, The UK has the third-largest economy in the European Union and also the sixth-largest economy in the world (Work Force 2009). This promotes employment in the UK, and inflation levels are the lowest within the European Union (Work Force 2009). Meanwhile, around 40% of Thailand's workers are employed in agriculture (data based on Bank of Thailand). Industry has recently increased, including computing and electronics, and many high-technology products. However, this is not enough to promote a social welfare service similar to that in England; this depends on the government's income.

According to Work Force 2009, residents in England and Thailand experience different economic growth which affects social welfare services and residents' income. England is a developed country where there are extensive social welfare services with residents having a relatively high standard of living compared to Thailand.

In relation to the public welfare, it impacts several things including the resident's education and social support such as child benefit, aging benefit and housing for homeless or unemployment. The most important factor identified within this study is education funding for the resident. According to the literature, English people can read and write because 100% of them attend school, which is compulsory (DH 2003). Meanwhile, it has been found that 94.9% of Thais can read and write. Poverty and living in rural areas is the most common problem in relation to literacy (MOPH 2007). This supports my study which found that different levels of education and knowledge between Thai parents and English parents were seen in this study. English parents can read and write whilst a

small minority of Thai parents is only able to write their name in order to sign the consent form. Educational level is related to poverty and family income.

As discussed in the previous theme regarding parent's education, the level of education may directly affect the individual in terms of intellectual development and decision making. Eventually, parents' education may influence failure to comply with the IC guideline because of misunderstanding. As previously discussed, parents in both countries who have a higher level of education are more likely to understand complicated information than parents who have a lower level of education. Different educational background impacts on the basic knowledge of self-care leading to different implementations such as vaccination schedule, food hygiene, the quality of eating and health checking. For example, parents living in poverty lack money to promote well being within the family. In addition, in low income families, there is a risk of malnutrition in children and consequently low-resistance. This also links to a study by Hong et al (2006), who found that 20% of children from the poorest households are more than three times as likely to experience adverse growth rate or stunting when compared with 20% of children from the wealthiest households.

It can be seen in the study that lack of educational background may introduce lack of assertiveness. For example, parents in Thailand lack the assertiveness to ask questions. Meanwhile English parents appear to ask many questions as soon as there are any new treatments or new intervention for their child. This supported Kilkus (1993) who argued that assertiveness is positively related to education level, training and experiences. In addition, Barry et al (1959) found that people in agricultural societies, the societies which are based on large-scale agricultural production, tend to be "conscientious, compliant and conservative" while people in hunting and gathering societies, also called foraging societies, which are based primarily on hunting wild animals, fishing and gathering wild foods for subsistence, are likely tend to be "individualistic, assertive and venturesome". Lack of assertiveness in asking

questions may contribute to the risk of non-compliance good IC practice in both healthcare staff and parents themselves as previously discussed.

However, as previously discussed, with regards to IC compliance factors, information is a greater factor than educational level. For example, certain parents who are poorly educated may perform good hand hygiene if they are frequently informed by healthcare staff. Therefore, the important thing is having the knowledge to promote well-being and prevent infection. This challenges healthcare staff to think how to promote self-care and infection control in order to prevent the spread of infection within people who are involved in the patient's care. This finding also supports Gizelis (2009) who found that wealth does not always promote good health and poverty does not always lead to poor hygiene practices.

In addition, according to Shears (2007), poverty does not only affect individual human beings, such as educational levels, but also impacts on healthcare services in terms of financial support. This support is a key factor in obtaining facilities and resources, as can be seen in this study when comparing developing countries with developed countries. This is because budgetary constraints result in limited resources. This will be discussed in further detail later.

5.6.2 Government policies

According to the findings, government policies are an important factor contributing to IC policies in this study. As can be seen in the study, local IC practice guidelines in Thailand are slightly different from England. This may result in different IC practice as a result.

IC policy is important to IC practices. As described in chapter 2 regarding the background of IC policies, local IC policies were developed in relation to national policies, standard IC guidelines and current IC difficulties. In this study,

patients at risk of developing infections were prioritised to receive more resources. As was observed in Thailand, the general wards had fewer resources than the ICUs due to limitations of budget. Thus, in the Thai hospital, the wards where patients are at higher risk of HCAs received greater support than other general wards. However in England, there are not many differences in IC policies between different wards.

In relation to wealth and poverty, different backgrounds, particularly government income, also has an impact on government policies and supportive resources provided to all government services. This means healthcare systems in Thailand and England are different. There is also a dependence on government policies. These policies could impact on funding, supportive resources and eventually guideline implementation. Healthcare systems are advocated by the government both in Thailand and England; in England, it is run by the Department of Health (DH), and in Thailand, it is run by the Ministry of Public Health (MOPH). Owing to limited funding in Thailand, certain IC guidelines were adapted before they could be implemented, for example, suction tubes are not single use (whilst these are single use in England). This links to Raka (2009) who argued that lack of financial support leads to poor management, poor infrastructure, overcrowding, insufficient hygiene, poorly functioning laboratory services, inadequate technology and a shortage of trained staff.

5.6.3 Funding and supportive resources

Funding and supportive resources are the outstanding factors in the differing IC practices between England and Thailand. This is because England is a developed country whilst Thailand is a developing country.

Regarding this issue, it can be seen that Thailand and England are vastly different in resource management in terms of limited funding and supportive resources. Funding may influence supportive policies in IC practice and also supportive resources, including human resources and equipment. Lack of

supportive policies, such as permission and allowance from the ICTs, causes several difficulties regarding both inadequate equipment and staffing in Thailand. Meanwhile, these problems were not seen in England. This finding supports Shears (2007) who found that lack of resources can affect healthcare associated infection in the developing world.

According to the findings, there is plenty of supportive equipment in England, including gloves, aprons, and single use equipment, which reduces the risk of cross infection between patients, between patients and staff, and between visitors and staff and patients. In Thailand, limited supportive equipment such as gloves and aprons leads to reduced IC policies being adopted. Even though the majority of studies (MHRA 2006) supported single use equipment as the best way to prevent and control infection, some re-use equipment was adapted for certain interventions in countries with limited resources. Similarly in this study, as can be seen in Thailand, some equipment is re-used such as gloves, bed pans, thermometers and suction tubes. However, this equipment was re-sterilized until the quality of the materials was reduced, and then they were discarded. Furthermore, lack of cubicle room space led to an MRSA patient being admitted to the general bay in ICU.

Regarding human resources, in this study, the general wards in both Thailand and England were full. However, the nurse: patient ratio in England was better than in Thailand. On the general wards the nurse to patient ratio was 1:4-6 in England and 1: 6-8 in Thailand. In the ICU, the nurse to patient ratio in England was 1:1 while in Thailand it was 1:1.5. When wards in England were short staffed, agency nurses were employed to provide support. This did not happen in the hospitals observed in Thailand because of the restricted hospital budget. Additionally, overtime payment is limited in Thai hospitals. Lack of staff results in load of duties as previously described. For example, nurses in Thailand insert cannulae and prepare TPN which in England is a pharmacist's responsibility. Finally, lack of staff may affect the quality of care. This supported by

Gunnarsdóttir (2009) who found that adequate nursing staff and organisational support can improve the quality of caring and job satisfaction.

According to the interviews, the greater the responsibility the nurse has, the greater the stress level. Workload can, therefore, increase job tension and stress, and it can be seen in Thailand that high workload demands caused several nurses to leave the hospital every year. This is supported by Arnold (2005), who argued that load of roles and responsibilities can develop low job satisfaction and develop stress in employees. This finding also supported Hayes et al (2006) who argued there are many factors leading to high nurse turnover, including workload, management style, empowerment and autonomy, promotional opportunities, work schedules, individual factors and economic factors. For example, economic factors and promotional opportunities also contribute to nurse turnover as can be seen in this study, particularly in the ICU. Moreover, an overload of patients leads to a decrease in job satisfaction (Hayes et al 2006). Aiken et al (2002) argued that an increased number of patients per nurse is associated with a 23% increase in the odds of burnout.

5.6.4 Guideline and implementation

According to guideline implementation, there are no extreme differences with the guidelines in Thailand and England because the guidelines were developed from the same sources such as EPIC guidelines, WHO and CDC. The guidelines were applied for use with paediatric patients in both Thailand and England. However, certain guidelines had greater flexibility in the Thai hospital in terms of limited equipment as previously discussed, and certain implementations were different such as staff uniform and patient uniform. These will be discussed in this section.

According to the findings, IC guidelines were developed based upon the IC standard guidelines and national guidelines within the country. Overall IC guidelines were implemented similar to the international standard protocols.

However, as discussed previously, it is apparent that the IC protocol guidelines were adapted for paediatric patients both in Thailand and England. There is only a suggestion from paediatric departments from Thailand that it would be very useful if IC protocols were established specifically for paediatric patients because certain protocols in adult IC were not fit for paediatric patients (Wongsawat 2008). Wongsawat (2008) found that there are certain protocols which were not fit for children such as the isolation protocol and maintenance IV cannulae. This is because there are no specific guidelines for paediatric patients and certain guidelines were not appropriate for children, particularly intravascular insertion procedures.

Moreover, the guidelines apparently were further developed in relation to the local hospital in Thailand. According to the interviews, the hospital IC guidelines were developed by the hospital's ICT based upon infection risk, funding and financial support before using. For example, ICUs have a higher risk of HCAs than general wards, so a greater provision was made for supportive equipment in ICUs than general wards as discussed previously. Guerra et al (2010) suggests that to achieve countrywide standardised IC practices in a developing country, authorities should consider the cultural, social, and financial differences between regions and identify specific hospital needs to make available the resources required to minimise such non-compliance. This issue is different compared with England where there is plenty of supportive equipment provided both in general wards and ICUs.

Limited resources in the Thai healthcare system results in a more flexible implementation of certain guidelines compared with England. This supports Raka (2009) who stated that the IC guidelines originated in developed countries are often perceived as a standard for the developing world, thus in developing countries some guidelines are modified to take into account differences in local needs. For example, many hospital activities in developing countries are limited because of a lack of financial resources, poor infrastructure, inadequate technology and laboratory facilities, overcrowding and a lack of trained staff. In

this study, some IC protocols in Thailand such as bathing patients are allowed by ICN to be carried out without wearing gloves based upon patient and staff safety. This means nurses should consider which practice is safe for patients and themselves. For example, if a nurse has a wound, they should wear gloves to protect themselves, or if a patient has an infectious disease or discharge present on the skin surface, nurses should wear gloves whilst caring for the patient.

5.7 Media and public awareness

The differences between developed and developing countries have been discussed, these include media and technology which are more advanced in developed countries than developing countries. Barriers linked to media and public awareness are identified within Thailand and England regarding.

According to the findings, it can be seen that English parents have a greater awareness regarding their child's health status than Thai parents. For example, English parent always kept their eyes on every episode of nursing intervention involving their child, and they also asked nurses questions when they saw some practices they had not previously seen. This supported Gill (2006) who found that media could increase levels of awareness among the general public and healthcare staff alike. This issue also links to parents' knowledge and educational background as previously discussed; based on this lay people rarely access healthcare information, or, if they access such information, they are often unable to understand it (Gould 2009).

However, nowadays, people are strongly influenced by mass media. The developing technology of computers and mobile phones allows people to do almost everything via these devices, which may promote self-directed learning in people over the last decade, particularly in developing countries. As can be seen from the interviews in this study, English people have greater access into the internet than Thai people. This is because the internet is provided

everywhere in England whilst it is limited to the cities in Thailand. There has been a vast growth of the internet in Thailand, but the people who mostly use the internet in Thailand are teenagers and young adults.

In addition, the global proliferation of the internet has substantively been used to provide information and communication (Bhagat et al 2009). The media is increasingly important for health care and also IC practice worldwide because mass media can impact on health knowledge, consumer attitudes and behaviour. The mass media can be both a change agent and reinforcing agent depending on its function in such a way as to change knowledge, attitudes and behaviour or to confirm existing behaviour patterns (Robertson et al 1978). In relation to the role of mass media, therefore, it either positively or negatively impacts on healthcare services as a result. For example, when parents and children watch certain media providing hand hygiene or food hygiene information, or advertising regarding tobacco on television, it could change their attitude about hand washing. In contrast certain advertising on TV could encourage children to have an interest in smoking because the material does not contain health-related information in that advertising.

However, according to the interviews, apparently there is a lack of health information presented in Thai language and a lack of health articles published in Thai language compared to England. The majority of information published on the internet is English language, and not many Thai people can understand English as well as Thai language. This supported Gill (2006) who found that mass media was the easiest route for patients/visitors to obtain health information (68%). However, resources are limited in developing countries (Fletcher 2009). In my experience, Thai mass media, such as television, radio, journalism, multimedia, newspaper, and telecom, have less discussion regarding health issues than the mass media in England. For example, recently 'superbug' and 'dirty hospital' obviously had an impact on media and public awareness (Gould 2005; Washer 2006). Meanwhile, I have not seen this issue discussed in the Thai media. Owing to a higher level of learning through

technology and health publications, this supports the argument as to why Thai parents have a lower awareness of the health information presented on the internet.

However, HCAs and IC practice not only impacts on media and public awareness, but public awareness and media can impact on IC practices. In this study, it can be seen that media and public awareness can be both an advantage and disadvantage. For example, healthcare staff in England are more likely to be opposed by parents compared with Thai staff. This can cause higher tension for English nurses than for Thai nurses. In contrast, English nurses may be more motivated to implement IC practice in every episode of nursing than the Thai nurses, because if they could be opposed by parents if they lack of awareness in IC practices. Meanwhile, lack of awareness from the Thai parents could influence lack of awareness in compliance with IC practice in Thai nurses.

In addition, public awareness in England not only influences IC practice in healthcare staff, but it also influences the health department. As can be seen from the literature reviewed, Weston (2008) argues that the rate of HCAs and media publication can reflect IC practices and influence the Department of Health to develop IC strategies to address this problem. This is similar to Fletcher (2009) who argued that public reporting regarding the performance of IC practice and in relation to rates of HCAI is increasingly well established in the NHS in England. Meanwhile, there is no evidence in Thailand to support that IC policies are set up in relation to public reporting.

5.8 Chapter summary

Six major influencing factors were identified from observations and interviews. These factors resulted in some similarities and some difficulties in infection control practices in Thailand and England.

First, culture is a key factor influencing different IC practices between Thailand and England. The greatest inspiration of culture is religion because it can establish attitudes, beliefs, norms, customs and values as a cultural transmission. Second, personal beliefs and attitudes which are part of personal concepts and are influenced by culture, are key factors which drive personal behaviour in people, including parents and Healthcare staff in both countries. These influence compliance and non-compliance in IC practice directly. Individual attitudes, beliefs and values both in parents and healthcare staff are the products of individual development related to cultures, social influences and organisation.

The third factor is roles and relationship which again were heavily influenced by culture. Different roles and duties in Thailand and England affect load of work and lack of time in the study; they may influence different working styles, relationships and teamwork which may contribute to IC practices eventually. Fourth, education and knowledge are important both in patients and staff in both Thailand and England. This is because education promotes understanding of IC practices. Parents are key people involved in nursing care in children because children lack awareness about their health. Thus, educating parents is necessary in IC practices. According to child nursing care, IC practice guidelines need to be balanced with child need and child health status. Thus, knowledge of child care and IC practice are crucial for healthcare staff. Training and experiences are important for healthcare staff to advocate decision making, balancing IC practice in children and consistency in IC practice. Different cultures between Thailand and England also influenced the individual training experiences among healthcare staff. Different knowledge of IC practice and experiences eventually affect decision making in IC practice.

Fifth, poverty and wealth may contribute to health problems in patients in developing countries. Government policies, healthcare system are influential factors contributing to an effective IC practice in both countries. This is because government policies influence IC policies within the hospital. Policies and

supportive resources are significant factors regarding action plans and implementation in hospitals and England has better support than Thailand. The final finding is that different media and public awareness between Thailand and England were identified both as an advantage and disadvantage in social influence for IC practice in this study.

CHAPTER 6: CONCLUSION

6.1 Introduction

The aim of this study was to investigate the factors influencing Healthcare Associated Infections (HCAIs) and infection control (IC) practices in the paediatric patient between Thailand and England. The literature shows most investigations in infection control are based on adults. This study also provides the balancing of IC practices based upon the nature of children by which contextual features and values and belief systems influenced practice decisions, as well as highlighting the relevance of learning in and from practice.

According to the literature, five to ten per cent of patients admitted to modern hospitals in developed countries acquire one or more infections. Developing countries have a higher risk than developed countries, around two to twenty times. However, the rates of HCAIs between Thailand and England are not significantly different: Thailand=6.5%, England=8.2% (Danchavijitr 2007; Humphreys et al 2008). A comparative study was conducted to identify differences in best practice in different countries, one being a developed country and the other a developing country. Best practice from both countries may develop and integrate IC practices which fit with paediatric patients in Thailand in the future.

This concluding chapter summarises the research study and the findings of the study in order to answer the research questions. The chapter will discuss the key findings and the effectiveness of employing the principle of ethnography to develop an understanding of IC practices in paediatric nurses, and the meaning they associated with it in relation to the context of their lived experiences. The chapter then discusses the limitations of the study. Finally, areas for further study will be described, and the chapter will finish with the summary of recommendations from participants.

6.2 Summary of the study and findings

The focus of this study was to explore the factors which influence IC practices in paediatric wards in different cultures: Thailand and England. The project aimed to explore IC practices in paediatric patients, and to compare the factors identified in both countries in order to make recommendations for best practice in paediatric patients. Qualitative research methods were employed based upon the principles of ethnography. Non-participant observation and semi-structured interviews were the main methods used to obtain participants' IC practice experiences and attitudes. Data was collected and analysed from various sources in six different paediatric wards in England and Thailand.

The data was grouped into six key themes; 1) culture 2) personal values, attitudes and beliefs, 3) nursing roles and relationships, 4) education, 5) poverty and wealth, 6) media and public awareness.

Different cultures and religions between Thailand and England are outstanding factors contributing to different individual attitudes, values and beliefs and different cultural context in IC practice as a result. Certain products of religion such as wearing the wedding ring in Christianity, Kara Sikh bangles in Sikhism and wearing long sleeves in Muslim may affect hand hygiene. These appear in the location where there are a large amount of people who respect these religions. Kissing and hugging between parents and paediatric patients, in English culture, may transfer germs consequently, particularly in very poor patients in intensive care unit.

In addition, the result of 'Kreng Jai', in Thai culture, may be good to avoid conflict and argument between people, but it may also introduce poor practice. For example, if nurses see doctors or other staff implementing poor practice, but say nothing because of 'Kreng Jai', it may eventually introduce HCAI in the patient. In addition, different cultures also influenced different lifestyles, for example, individualism was of a higher level in English people than Thai

people. This affected working styles, social hierarchy and communication between staff and parents. Finally it contributed to several difficulties such as conflict, misunderstandings and malpractice in IC practice. This is a new finding which links to existing theory regarding individual development and culture.

In this study, culture not only influenced factors contributing to different IC practice in Thailand and England, but also influenced the methodology of the study, especially the willingness of staff to take part. For example, the Thai nurses allowed me to interview them on their day off and volunteered more readily than the English nurses.

The most outstanding factor influencing compliance and non-compliance with IC practice is the individual which is the result of culture, including attitudes, values and beliefs. This is because it has frequently been seen both in Thailand and England. Even though England has got better support, including IC policies, funding and equipment from the government, if healthcare staff lack of awareness, they may contribute to poor practice as a result. Thus, the individual attitudes, beliefs and values are important for IC practice worldwide, not only in Thailand and England. These individuals can develop both good and poor IC practice. Another reason why these factors are important for implementing IC practice is that they are generated from inside, called intrinsic factors, which are the most difficult to control in IC practice in both parents and staff; I have seen that what staff do is sometimes different to what they think. Apparently, social influences and peer groups within organisations are important in influencing the individual in healthcare staff. Therefore, individual concepts, including personal attitudes, values and beliefs, are crucial factors influencing infection prevention and IC in paediatric patients. This supports the principles of individual development theory, social behaviour theory and consistency theory discussed in chapter 5.

Roles and duties are important in workplaces. Different roles, duties and relationships between Thai and English staff resulted in different IC practice.

Work load may contribute to stress, lack of time, lack of satisfaction and eventually leading to increased staff turnover. In addition, different roles influence different teamwork and relationships between staff, patients and parents. As can be seen different working styles and teamwork between Thai and English hospital influenced IC practice in this study. This also related to how individuals develop differently in Thai and English cultures, and it can be seen that different individual affected collaboration among healthcare staff or between staff and parents or patients. In addition, the barrier between professional groups and other staff within the hospital affected IC practices. Lack of teamwork between staff and collaboration between staff and parents may affect IC practice as a result. This is because IC is everyone's responsibility, including nurses, doctors, other staff and also patients and parents. This is a new finding which links to existing theory regarding roles and stress at work.

Education is also a powerful factor influencing knowledge and understanding of IC practices and was similar between the two countries. Parents' education level is influential in understanding complicated information in IC practice. For example, differences in literacy between the residents in Thailand and England resulted in different self-care practices in this study. However, highly informed parents are likely to have a higher awareness in IC practice than parents who have got a higher degree. Thus, informed parents are more important than education level. This challenges healthcare staff to consider how to inform parents to follow the IC guidelines properly. Healthcare staff in Thailand and England demonstrated the same level of fundamental care, particularly paediatric nursing, but nurses in England obtain diploma degrees whilst Thai nurses obtain Bachelor degrees. There were not many differences in IC practice between staff with the fundamental knowledge. However, the more experiences, training and advanced education staff had, the more assertive they were in decision making on IC difficulties. Decision making is extremely important for practitioners because it can contribute to both good and poor

practices. This is also a new finding which links to existing theory regarding cognitive and learning theory.

Poverty and wealth are the key factors in relation to supportive resources between Thailand and England. Wealth creates several differences between developed countries, developing countries and undeveloped countries in terms of supportive technology, laboratory facilities, healthcare equipment and healthcare staff. In this study, funding and supportive resources are the **prominent** factors in the differing IC practices between England and Thailand. Wealth influenced better supportive resources which are essential factors promoting IC practice. Limited funding and resource directly affected IC practice, for example, equipment re-use in Thailand compared with single use equipment in Thailand. Lack of supportive policies in IC practice contributed to a lack of supportive equipment and staff. As was seen in this study, England was fully supported in terms of both healthcare staff and healthcare equipment, thus, it directly benefits patients in terms of safety. Meanwhile, there is a lack of staff and limited equipment in Thailand, so ICTs have to adapt some of the IC guidelines in order to meet the patients' needs and patient safety within limited resources. This supports studies previously discussed in chapter 5.

Currently, media and technology are increasingly important factors influencing both positive and negative effect to IC practice within the development of the social network. Media and technology in England are more advanced than Thailand. Health information is available on many official websites and also on the news whilst it is limited in Thailand. For example, 'superbug' and 'dirty hospital' was obviously discussed in the media and affected public awareness (Washer 2006). The increase of media coverage and public awareness both advantaged and disadvantaged healthcare services. In term of advantage, it promoted self-care and awareness when people were faced with infection. For example, people were more careful to do hand washing before contact with a paediatric patient or they always kept their eyes on staff when staff perform any intervention. This meant increased pressure on staff in England but it reminded

staff to be better aware during practice. In addition, according to the literature reviewed, the higher public awareness also encouraged IC policy. This finding supports existing literature previously discussed regarding the influence of HCAI on the media and public awareness. However, this study explores a new relationship: the effect of media and public awareness of healthcare staff.

6.3 The effectiveness of ethnography and its contribution to knowledge

The main research question for this PhD study was “are there different factors influencing IC practices between England and Thailand?”

This study drew upon principles of ethnography to explore the factors which influence IC practice within the meaning of the day-to-day experiences. The specific methodology used was chosen from several methodologies based on the aims of the study. In addition, to obtain a wide variety of data in different circumstances, including lifestyles, culture, beliefs, attitudes, and construction, a comparative study was adopted.

In this study, I gathered information regarding the experiences of the nurses, including IC practices in different countries and cultures of nursing care and relevant people. Conducting the study in the field with the participants and others associated with IC practices meant that I gathered a wealth of information about the meanings of participants’ experiences and environment. This was different from collecting data by interview without observing because I also saw other factors influencing participants’ implementation, and everything I saw and heard in relation to my project was important. This is extremely valuable in supporting the conclusions of this study. For example, sometimes things I saw differed from things I was told during the interviews.

Thus, this was very helpful for the study which intended to explore the meanings of people in particular groups or places.

6.4 Contribution of this thesis to paediatric infection control practices in Thailand and England

In the past, studies regarding infection control and Healthcare associated infections (HCAIs) have been few and not many of these have used a qualitative approach study. Few of these studies have focused on children and infection control nursing, though HCAIs in children are a major concern in many countries worldwide but there is a lack of studies identifying factors influencing HCAIs in children and proper infection control guidelines for paediatric patients.

This is the first comparative study of paediatric infection control practices within two countries with different cultures and economic backgrounds: Thailand and England. This study supports the existing knowledge in the field of infection control practices such as the importance of education and relationships between professional groups and patients. This study also contributes to new knowledge in this field. While this is the first study of infection control practice in children, this study is the first to identify the influence of culture affecting IC practice.

Different cultures were found to affect many factors such as the individual, roles and relationships, education and training, poverty and wealth, and media and public awareness. These factors were found to ultimately affect IC practice. For example, individualism was higher in English people, both in healthcare staff and parents, than among Thai people. This may affect relationships between different staff groups or staff and parents. Conversely, Thai nurses were more motivated by collectivism, this also affects collaboration between people and team work.

Some products of culture such as 'Kreng Jai' in Thai people may eventually introduce lack of compliance in IC practice. For example, Thai nurses were reluctant to chastise doctors and parents may feel reluctant to remind healthcare staff. This challenges Thai infection control teams to prevent the

poor practices in Thai healthcare staff and prevent misunderstanding of information in Thai parents.

The findings will be beneficial for both countries for developing infection control guidelines for paediatric patients and will also be transferable to adults within the cultural context in each country in the future. For example, to motivate hand hygiene practice within a collectivism culture (e.g. Thailand) will be different from motivation techniques which would be successful within an individualism culture (e.g. England). Individual punishment and sanction may be useful to obtain collaboration from healthcare staff in an individualism culture whilst organisational image may be useful to motivate collaboration between healthcare staff in collectivism culture. Recommendations based upon cultural differences are discussed further in the recommendation section (section 6.7).

6.5 Areas for Further Study

This study has investigated a number of additional factors which contribute to HCAs in paediatric patients such as attitudes, cultures, education, poverty and wealth, and mass media. A range of issues also arose which could have been explored in greater depth. However, there are a number of other issues which were only touched upon that could be explored further.

As can be seen in the study, individual behaviours and responsibility such as poor practices are sensitive issues in relation to personal attitudes, values and beliefs. Regarding this issue, I clearly saw differences between the observations and the interviews. Owing to the limited time I spent in the clinical setting and working with each participant, I only touched on this problem, and I feel that there is more hidden behind the scenes. I think this could be an interesting issue to explore further because it is the highly important factor influencing compliance and non-compliance of IC guidelines. The outcome of further research might be very useful for improving IC practices in the future.

Another area which would benefit further investigation is the use of protective equipment. As I saw, there is plenty of single use equipment in England while it is limited in Thailand; however rates of HCAs were not significantly different between the two countries according to the literature reviewed. Certainly different usage impacts on hospital expenses. Further study might be useful to decrease this overwhelming cost of hospitalization, and it could be beneficial to the government as a result.

According to the study, certain IC protocols were adapted to adopt in paediatric patients, such as IV cannulae and isolation. IV cannulae was not regularly changed every three days, and parents were allowed to stay overnight with paediatric patients in term of psychological support in paediatric patient. Further study regarding the effect of prolonged insertion cannulae in paediatric patient IC protocol in adults might be beneficial to set up the specific IC protocol in children.

According to the ICTs, ICTs in England were separated between nurses and doctors while ICTs in Thailand were the same team, for example, the ICT is mostly run by nurses, but one doctor, a microbiologist, works as a consultant. Nurses have the authority to report HCAI by filling the form directly. Meanwhile, ICTs in Thailand involves nurses, other healthcare staff and a doctor. The doctor is a head of ICT and has to be involved when ICT meetings were organised. If there are HCAI on a ward, the doctor is the person who responds to filling in the form. It would be helpful if there were further studies comparing the effectiveness of both models.

6.6 Limitations of this study

There were a number of limitations in this study which are described in this section.

There are only a small number of studies conducted in paediatrics, including in Thailand, England and worldwide. There are only a small number of neonatal studies, and most of them were conducted in ICUs. This meant that I had to review the literature in adults and other relevant studies instead. In addition, most IC protocols have been developed for adults, so studies relating to IC protocols were conducted in adult patients. Thus, the IC protocols in adults were reviewed instead of IC protocols in children.

As this was a PhD study, time frame was limited and this created various difficulties. Several processes took a long time such as ethical consideration processes in England and Thailand. For example, ethical approvals were submitted to five different institutes, including De Montfort University, The National Research Ethics Service (NRES) and the Local NHS committee (R&D), and two different groups of research committees in Thailand. Time limitations also resulted in conducting the research in each field work. This is one of the reasons why I had to employ purposive sampling by choosing one tertiary hospital in Leicester and two tertiary hospitals in Bangkok, Thailand because they were convenient for conducting data collection in a limited time. If I had more time available, I could have spent longer observing in the clinical setting, and observed in a variety of hospitals.

In addition, when I wanted to interview link nurses who were extensively trained in IC, the exploration of the role of IC nurses was also a limitation. There were three to four IC nurses working in the large hospital in Thailand, and they are extraordinarily busy. There was little opportunity to talk to the IC nurses in Thailand about the developing of IC protocols. In addition, there were also one or two link nurses working in the clinical setting, but I could not interview them because they did not offer themselves to this study. This is an ethical consideration and relies on individual consent. Ethical considerations are important in the study. Thus, I had to be careful when I wanted to observe any other events if it was not mentioned in the ethical approval, which was related to the ethical application submitted before the study commenced. Even if in some

situations it might have been extremely useful for this study, if it required permission then I had to omit it.

Moreover, as English is my second language, I felt less confident interviewing people in the English language, particularly in an hour long interview. Even though I had practiced before I began to collect the data, I struggled in the first case. Thus, after each interviewed case, I listened to tape record and attempted to practice again and again before I started interviewing the next case. The more I interviewed participants, the more fluently I spoke and I became more relaxed.

6.7 Recommendations

There are numerous recommendations for practice which have arisen as a result of this study. According to the findings, some factors may not contribute to infection directly, but can increase the risk of infection such as negative attitudes to IC practice. Culture was found to affect many factors within this study. It is therefore necessary to consider culture when attempting to change IC practice. Recommendations relate to attitudes towards IC practice, roles of staff, training and education and media publication.

As seen in the findings, good attitudes promoted good IC practice in nurses, and it was apparent that individual attitudes, beliefs and values were changed by inspiration from a good model and rewards (Snow 2006). Therefore, this could be useful for ICT to motivate healthcare staff to change their attitudes in IC practice. However, with regard to different cultures, Thailand is has a collectivism culture while England has an individualism culture. Therefore the method utilized to motivate healthcare staff may be different. For example, giving rewards or announcing to others the names of healthcare staff who consistently follow good practices might be a powerful idea to reinforce this to all staff in Thai culture, but may be less interested in English culture. Individual support or feedback may be useful to English culture.

Reflecting on IC practices might help to improve values, attitudes and behaviours in both Thailand and England. For example, encouraging paediatric nurses to reflect on their practices by talking about their beliefs and values and how they influence decision making may be helpful to know what staff understand and feel regarding IC practice. Further information may be provided when staff misunderstand. In relation to attitude-behaviour consistency, the frequency of inspection or infection control audit may be useful to increase the consistency of IC practice both in Thailand and England, and this is such a challenging task in improving IC practices. Negative sanction and punishment from peers may be useful to increase consistency in Thai culture, while negative sanctions from the organisation may be helpful to increase consistency in English culture.

Moreover, good relationships between staff also promoted good collaboration and decreased arguments among healthcare staff and parents. Thus, encouraging more activities among healthcare staff and between staff and parents may promote relationships between staff in both Thailand and England. However, encouraging parents to talk may be further focused in Thai culture. Group rewards may be helpful to encourage collaboration among healthcare staff within the Thai culture rather than within the English culture. Participation in conferences and participation in patients ward rounds by healthcare staff may be useful to achieve greater teamwork in English hospitals.

According to the study, education is extremely important regarding compliance with IC practice. Experiences and advanced nursing influenced different practices and decision making between nurses. Thus, promoting education or information campaigns may raise knowledge of IC practices to all staff equally. There are several ways to promote education and information, including self-directed learning, training, participating in nursing conferences and advanced courses in IC training. Funding from the hospital may be helpful to encourage staff to learning and training in both Thailand and England. In addition, higher

wages may be useful to inspire staff to study in advance. Group support may be helpful in Thai culture, and individual support may be helpful in English culture. For, example, the benefit of education in Thai staff which is used to inspire healthcare staff may focus on the successfulness of organisation rather than individual success. Meanwhile, a greater level or greater position may be useful to inspire staff in England.

Media and public awareness are important influencing IC practices in this study. Information to both patients and staff are also important. It affected some obstacles both in healthcare staff and parents such as misunderstanding, if the information was not clear. Thus, in order to promote good understanding in healthcare staff, new updated information regarding infectious diseases and IC practices should be more prominent and easy to access. This might help to update knowledge of IC and remind staff about proper IC practices. In Thailand there are specific IC files visibly provided in the clinical setting, and everyone must read them. This leads to knowledge of IC that is not limited to only the link nurses. This may be applied in English hospital to share the IC knowledge for everyone in the wards.

In Thailand parents less likely to question nurse because of hierarchy and 'Kreng Jai', leaflets and posters should be provided for parents appropriately. In order to confirm that parents properly understand, particularly in Thailand, healthcare staff should recheck the parents' knowledge by observing, asking questions or demonstrating hand washing. Encouraging parents to talk and feedback may be useful not only obtain trust, but may also enhance the IC knowledge and understanding in both cultures.

Furthermore, conducting clinical research could generate new knowledge about IC practices. As participants in Thailand suggested when they do clinical research, the outcomes of studies will be applied to improve their practices. Subscribing to a research journal may be useful to encourage healthcare staff to update their knowledge and obtain the higher skills of inquiry. As I saw in

Thailand, one subscribed to a paediatric journal and reading the research journal improved mouth care after suctioning in order to decrease risk of VAP in the ICU. According to a recent study by Hutchins et al (2009), the use of oral care can reduce the rate of VAP by 89.7%. Likewise, this may be helpful in English hospitals to enhance the knowledge of IC practice.

Moreover, participating in nursing conferences with the team or student nurses before and after shifts might be helpful to review and reiterate proper practice for the patients in both Thailand and England. This could enhance and update knowledge of nursing for nurses because all nurses will discuss the patients' problems and nursing care together. Recommendations are obtained from experienced nurses during nursing conferences. Therefore, encouraging briefings between staff nurses before and after work not only promote teamwork between nurses, but also encourage the nurses to update the knowledge of IC practice together.

6.8 Chapter summary

There are six major groups of factors which influence IC practices in paediatric patients. The most frequently found within this study results from the individual, which is important in healthcare staff, patients and parents. These include attitudes, values and beliefs associated with cultures and individual development. In other words, attitudes, values and beliefs establish personal behaviours which are different in different cultures. In relation to culture, religion is a key factor contributing to different life styles, attitudes, customs, norms and beliefs. These are extrinsic factors which could influence different practices in Thailand and England. An additional extrinsic factor which is important in IC practice is education because it promotes understanding and knowledge of IC practices in staff and patients or parents. In addition, different backgrounds between Thailand and England, developing and developed country, could affect different policies, funding and resources, and implementations. Wealthy countries not only benefit from better social welfare services, funding and

resources, but it also from a higher level of media and technology which could lead to a more educated public with increased awareness. Media and public awareness are increasingly important to encourage better healthcare services nowadays because client satisfaction is one of the indicators to approve the quality of healthcare service.

Ethnography was useful for this study to ascertain daily experiences and individual behaviours from both Thailand and England, but there are certain limitations, including place, time, different backgrounds and ethical considerations. Reflections on the process of undertaking this thesis will be described in the next chapter.

CHAPTER 7: REFLECTION

Reflections on the study design

I spent a considerable amount of time struggling to prepare this study in order to design the most appropriate methodology based upon the research question. It gave me an advantage in that I understood a number of other methodologies from which to approach a qualitative project. Consequently, I felt confident in rejecting some data collection methods. In the future, I will have the experience to think critically about what is realistic, achievable and relevant when I plan to conduct a qualitative study.

In terms of a PhD study, I had three years to do this project, and I had to collect data in six different wards and two different countries. This also challenged me to complete the research project in a limited time while there were several requirements to address regarding the research regulations in both countries, including ethical approval, obtaining certain practices and permission from the clinical setting.

I spent nearly 6 months obtaining ethical approval from five institutes in England and Thailand. During the ethical approval submission, there were additional requirements such as a letter from the head of nursing and Good Clinical Practice (GCP) training. Hence, I had to contact the head of nursing and submit a Criminal Record Bureau check (CRB), and obtain an honorary contract before I obtained the supportive document from the head of nursing. Thus, obtaining ethical approval from numerous organisation and hospital access took a considerable amount of time.

The most difficult part for me was how to recruit the volunteers to participate in my project and obtain consent forms because I had never worked in England before. This made me extremely excited and nervous. Thus, I had to prepare myself by learning about the culture of nursing and the healthcare system in

England before I started recruitment. In addition, I had to negotiate with the gatekeepers, such as the ward sister or ward manager, in order to obtain the information and infrastructure of those wards and to gain permission to conduct the research. This process also took a long time because obtaining an appointment with ward sisters took around a month per ward. However, the gatekeepers were really helpful with my study, particularly as I was conducting the study in different places I was not used to. It helped me gain trust from participants as a result and it was not difficult to get volunteers. I adopted a proactive approach to obtaining consent by making appointments to see individuals and explaining the project in person.

During the data collection period, I became aware that there was a difference in the method of consent I had employed for parents and nurses. Nurses were required to sign a consent form to participate in the study, whereas parents were not because the data about children were not collected. Whilst I was satisfied that parents gave their verbal consent, I felt written consent may have been more appropriate, particularly in the observation phase of the study. That was because I had to observe everything related with the healthcare intervention plus communication between parents and nurses. This was due to the ethnographic nature of the study, in that I had to explore everything that was revealed which was relevant to the project question. Thus, some important conversations between nurses and parents or nurses and colleagues were jotted down in the field notes, but were summarised in my own words and explained in more detail day by day. This included some informal questions that I asked participants. It was rather difficult to record by tape recorder in terms of permission and ethical considerations. If the study had been done in a shorter period in this setting, I would have missed valuable data.

However, I had to make a plan to conduct the research ward by ward, and spent a small amount of time in each ward, two or three months per ward. In addition, I spent a small amount of time with each nurse in order to build rapport, give information and obtain a consent form before I started observing.

This was because I realised that my first participant, a pilot case, was terribly nervous and stressed for half a day while I was observing her without participating in anything. Then I had to change my role by volunteering to help with some easy jobs such as passing something; this made her feel better. Then I changed the plan to build up rapport with other participants until they became familiar with me, and it helped the participants work naturally. I spent nearly two or three weeks with each participant, including observing and interviewing. It depended on participants' work schedule as well because they worked in shift rotation. I had to wait nearly a month until I could interview some participants.

Working in shift rotation also impacted on time. This meant that when participants work continuously, they need to take a break and rest. For example, some participants worked 3-4 night shifts continuously, then they stayed at home and did not want to be interviewed during their time off. Thus, I had to wait until they returned to work on the day shift, and then they were interviewed before or after work in the staff room or an available room in their ward. It was a bit difficult if other staff interrupted us during interviewing. Thus, to solve the problem, I asked the rest of the participants to allocate the spare room or the quiet room for the interview, which was safe from interruption.

Field notes were manually coded day by day after observing first, in order to set out the face to face interview questions. Then they were later coded using the NVIVO programme. Tape recordings were transcribed and the transcriptions were confirmed by colleagues who were good at English and Thai languages. Moreover, the interview transcriptions were sent to the participant directly in order to check and confirm what they said during the interview. Then all transcriptions were coded by the NVIVO programme to identify themes. I felt the NVIVO programme was useful for this study because of the large amount of data: twenty sets of field notes and twenty transcriptions. Each transcription was very long. Thus, the NVIVO programme helped me manage all the data even though I had some difficulties in some periods of coding due to frequent programme updates (I had to use the latest version installed on the university

computer). However, I felt it was beneficial for me to learn the latest version and get used to it because it will be useful for my future research.

However, I obtained a lot of knowledge and experience by conducting ethnographic approach. This can be applied to further research in my career. It would be valuable to carry out further research which explores in depth each factor obtained from this study, and their potential challenges within traditional cultures. For example, further research could explore why healthcare staff are able to consistently comply with IC practice based upon individual behaviours and responsibility. In addition, the best practices between England and Thailand will be integrated for further study, and it will be used to set up a useful IC protocol for paediatric patients in the future.

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Appendix- 1 Literature search strategy

Literature search strategy

The literature search strategy comprised multiple systematic reviews. Initial searches were conducted by using combinations of keywords which are relevant to the research question. For example, the primary keywords “HCAI/HAI and NI” were used in the beginning, and then they were combined with “children” or “infection control practices” or “factors” or “infection control difficulties”. Additional search words and phrases such as HCAI/HAI/NI in various combinations with epidemiology, prevention, therapy, infection risks, impact or rates, control, precaution, link nursing, handwashing, environmental risks and compliance or difficulties were used in order to shape to narrower topic.

Literatures were selected from various databases both in English and Thai publication. These include Google, British Nursing Index (BNI), Medline, PubMed, EBSCOhost, Nursing and Allied Health Literature (CINAHL) and ScienceDirect. International literature published in English, research reports and organisational recommendations were included, such as the Centers for Disease Control and Prevention (CDC), Health Protection agency (HPA), Department of Health (DH), and Infectious Disease Association of Thailand.

Current Contents for articles published in 5 years former in English and Thai were prioritised. If there are not currently relevant articles published in five years (2006-2010), earlier relevant articles were selected. For example, there are not many Thai articles published regarding extra cost and impact of NI, thus, the article published in 1989 was selected.

Example Result

There are 22,485 articles from Ebscohost, a big database including CINAHL, British Nurse Index, Academic Search Premier, E-journal and PsycArticles, when I use the keywords “HCAs” or “HAIs” or “NIs” available from 1886-2011.

There are 10,589 articles available from 2006-2011.

Then when I focused on only CINAHL databsed, there are 299 articles available form 2006-2011

The screenshot shows the EBSCO Academic Search Premier interface. At the top, there are navigation links for 'New Search', 'Subjects', 'Publications', 'Images', and 'More'. A search bar contains the query 'HCAIs OR HAIs OR NIs' with dropdown menus for 'in Select a Field (optional)'. Below the search bar, there are links for 'Basic Search', 'Advanced Search', 'Visual Search', and 'Search History'. The search results are displayed on page 1 of 5, with 299 results found. The results are sorted by relevance. The first result is 'State-sponsored programs help PA hospitals reduce HAIs.' from Healthcare Benchmarks & Quality Improvement, 2010 Sep; 17 (9): 97-100. The second result is 'Changes in measurement of Haemophilus influenzae serotype b (Hib) vaccination coverage -- National Immunization Survey, United States, 2009.' from MMWR: Morbidity & Mortality Weekly Report, 2010 Aug. The left sidebar shows the search criteria: 'Boolean/Phrase: HCAIs or HAIs or NIs', 'Limiters: 2006 - 2011', and 'Refine your results' options including 'Full Text', 'References Available', and 'Scholarly (Peer Reviewed) Journals'.

There are 28 articles available when I combined “HCAs” and “Children”.

EBSCO
 Searching: **Academic Search Premier**, Show all | Choose Databases »

Healthcare-associated Infections in Select a Field (optional) Search Clear ?

AND children in Select a Field (optional)

AND in Select a Field (optional) Add Row

Basic Search | Advanced Search | Visual Search | Search History

Page: 1 2 3 Next Relevance Sort Page Options Alert / Save / Share

28 Results for...

Refine your results

Full Text

References Available

Scholarly (Peer Reviewed) Journals

2004 Publication Date 2010

Update Show More »

1. [Mandatory reporting of healthcare-associated infections: A long way to go](#) 📄
 American Journal of *Infection Control*, June 2005, Vol. 33 Issue: Number 5 p20-20, 1p; (AN 10078201)
 Database: E-Journals
 Add to folder | Relevancy: ██████████
2. [Administrative Data Fail to Accurately Identify Cases of Healthcare-Associated Infection](#) • 📄
Infection Control and Hospital Epidemiology, April 2006, Vol. 27 Issue: Number 4 p332-337, 6p; (AN 8720202)
 Database: E-Journals
 Add to folder | Relevancy: ██████████

There are 52 articles available when the keywords “HCAIs” and “Neonatal” are combined.

New Search Subjects Publications Images More Sign In Folder Preferences

EBSCO
 Searching: **Academic Search Premier**, Show all | Choose Databases »

Healthcare-associated Infections in Select a Field (optional) Search Clear ?

AND neonatal in Select a Field (optional)

AND in Select a Field (optional) Add Row

Basic Search | Advanced Search | Visual Search | Search History

Page: 1 2 3 4 5 Next Relevance Sort Page Options Alert / Save / Share

52 Results for...

Refine your results

Full Text

References Available

Scholarly (Peer Reviewed) Journals

2002 Publication Date 2010

Update Show More »

1. [Healthcare-associated infections in neonatal units: lessons from contrasting worlds](#) 📄
 Journal of Hospital *Infection*, April 2007, Vol. 65 Issue: Number 4 p292-306, 15p; (AN 11495950)
 Database: E-Journals
 Add to folder | Relevancy: ██████████
2. [Impact of Staffing on Bloodstream Infections in the Neonatal Intensive Care Unit](#) 📄
 by Cimiotti, Jeannie P.. *Archives of Pediatrics & Adolescent Medicine*, August 2006, Vol. 160 Issue: Number 8 p832-836, 5p; (AN 9718098)
 Database: E-Journals
 Add to folder | Relevancy: ██████████

There are 28 articles available from ScienceDirect databased within the field “HCAIs in England”.

28 articles found for: ALL(HCAIs in England) [Journal/Book(Journal of Hospital Infection)]

[Save this search](#) | [Save as search alert](#) | [RSS Feed](#)

< Previous page **results 1 - 25** Next page >

= Full-text available = Abstract only

Search within results

[Search](#)

Refine results

[Limit to](#) [Exclude](#)

Content Type

Journal (28)

Journal/Book Title

Journal of Hospital Infection (28)

Topic

infection control (5)

hand hygiene (3)

- [Export citations](#) | [Open all previews](#) Sort by: [Relevance](#) | [Date](#)
- Four Country Healthcare Associated Infection Prevalence Survey 2006: overview of the results** Original Research Article
Journal of Hospital Infection, Volume 69, Issue 3, July 2008, Pages 230-248
 E.T.M. Smyth, G. McIlvenny, J.E. Enstone, A.M. Emmerson, H. Humphreys, F. Fitzpatrick, E. Davies, R.G. Newcombe, R.C. Spencer and on behalf of the Hospital Infection Society Prevalence Survey Steering Group
[Show preview](#) | [Purchase PDF \(332 K\)](#) | [Related articles](#) | [Related reference work articles](#)
 - Hand hygiene and infection in hospitals: what do the public know; what should the public know?** Review Article
Journal of Hospital Infection, Volume 73, Issue 4, December 2009, Pages 397-399
 M. Fletcher
[Show preview](#) | [Purchase PDF \(87 K\)](#) | [Related articles](#) | [Related reference work articles](#)
 - Four country healthcare-associated infection prevalence survey: pneumonia and lower respiratory tract infections** Original Research Article
Journal of Hospital Infection, Volume 74, Issue 3, March 2010, Pages 266-270
 H. Humphreys, R.G. Newcombe, J. Enstone, E.T.M. Smyth, G. McIlvenny, E. Davies, R. Spencer and on behalf of the Hospital Infection Society Steering Group
[Show preview](#) | [Purchase PDF \(111 K\)](#) | [Related articles](#) | [Related reference work articles](#)

There are 3 articles available from ScienceDirect databased within the field “HCAIs in Thailand”.

3 articles found for: ALL(HCAIs in Thailand) [Journal/Book(Journal of Hospital Infection)]

[Save this search](#) | [Save as search alert](#) | [RSS Feed](#)

= Full-text available = Abstract only

Search within results

[Search](#)

Refine results

[Limit to](#) [Exclude](#)

Content Type

Journal (3)

Journal/Book Title

Journal of Hospital Infection (3)

Topic

infection control (3)

nosocomial infection (1)

- [Export citations](#) | [Open all previews](#) Sort by: [Relevance](#) | [Date](#)
- Lowbury Lecture 2005: infection control from a global perspective** Original Research Article
Journal of Hospital Infection, Volume 64, Issue 3, November 2006, Pages 217-223
 A. Hambraeus
[Show preview](#) | [Purchase PDF \(325 K\)](#) | [Related articles](#) | [Related reference work articles](#)
 - Device-associated nosocomial infection rates in intensive care units of seven Indian cities. Findings of the International Nosocomial Infection Control Consortium (INICC)** Original Research Article
Journal of Hospital Infection, Volume 67, Issue 2, October 2007, Pages 168-174
 A. Mehta, V.D. Rosenthal, Y. Mehta, M. Chakravarthy, S.K. Todi, N. Sen, S. Sahu, R. Gopinath, C. Rodrigues, P. Kapoor, V. Jawali, P. Chakraborty, J.P. Raj, D. Bindhani, N. Ravindra, A. Hegde, M. Pawar, N. Venkatchalam, S. Chatterjee, N. Trehan, et al.
[Show preview](#) | [Purchase PDF \(132 K\)](#) | [Related articles](#) | [Related reference work articles](#)
 - Lowbury Lecture 2008: infection control and limited resources – searching for the best solutions** Original Research Article
Journal of Hospital Infection, Volume 72, Issue 4, August 2009, Pages 292-298
 L. Raka
[Show preview](#) | [Purchase PDF \(135 K\)](#) | [Related articles](#) | [Related reference work articles](#)

There are 50 articles available within the field “HCAIs” and “Prevention” and “control”

New Search Subjects Publications Images More Sign In Folder Prefere

Searching: **Academic Search Premier**, Show all | Choose Databases >

HCAIs in Select a Field (optional) Search Clear ?

AND Prevention in Select a Field (optional)

AND control in Select a Field (optional) Add Row

Basic Search | Advanced Search | Visual Search | Search History

Page: 1 2 3 4 5 Next Relevance Sort Page Options Alert / Save / Share

50 Results for...
Boolean/Phrase: HCAIs and Prevention and control

Refine your results

Full Text

References Available

Scholarly (Peer Reviewed) Journals

2003 Publication Date 2010

1. [HCAIs: a statutory code of practice in England and Wales... Healthcare-associated infections.](#) Gilmour D; Journal of Perioperative Practice, 2007 Jun; 17 (6): 266-8, 270-1 (journal article - pictorial, tables/charts) ISSN: 1750-4589 PMID: 17598676 CINAHL AN: 2009605545
Subjects: Cross Infection; Cross Infection; Perioperative Care
Database: CINAHL Plus with Full Text
[Add to folder](#) | Relevancy:
[PDF Full Text](#)
2. [A local response to implementing Saving Lives in a large acute Trust.](#) (includes abstract); Edden AC; Willan JL; British Journal of Nursing (BJN), 2009 Oct 8-21; 18 (18): 1138-42 (journal article - forms, tables/charts) ISSN: 0966-0461 PMID: 19966735 CINAHL AN: 2010434119

There are 12 articles available within the field “HCAIs” and “Prevention” and “control”

New Search Subjects Publications Images More Sign In Folder Prefere

Searching: **Academic Search Premier**, Show all | Choose Databases >

HCAIs in Select a Field (optional) Search Clear ?

AND Factors in Select a Field (optional)

AND in Select a Field (optional) Add Row

Basic Search | Advanced Search | Visual Search | Search History

Your session has timed out due to inactivity. If you had items in the Folder or searches in Search History, they have been cleared.

Page: 1 2 Next Relevance Sort Page Options Alert / Save / Share

12 Results for...
Boolean/Phrase: HCAIs and Factors

Refine your results

Full Text

References Available

Scholarly (Peer Reviewed) Journals

2005 Publication Date 2010

1. [Risk factors for death in a cohort of patients with and without healthcare-associated infections in Finnish acute care hospitals.](#) (includes abstract); Kanerva M; Ollgren J; Virtanen MJ; Lyytikäinen O; Prevalence Survey Study Group; Journal of Hospital Infection, 2008 Dec; 70 (4): 353-60 (journal article - research, tables/charts) ISSN: 0195-6701 PMID: 18951660 CINAHL AN: 2010210143
Subjects: Cross Infection; Death; Hospitals; Aged: 65+ years; Aged, 80 and over; Female; Male
Database: CINAHL Plus with Full Text
[Add to folder](#) | Relevancy:

INVITATION TO PARTICIPATE IN A RESEARCH PROJECT

Study Title:

A comparison of the factors which influence infection control in paediatric wards in England and Thailand.

Introduction

You are invited to take part in a study on nursing practices and attitudes in infection control in England and Thailand. Before you decide to take part it is important for you to understand why the research is being carried out and what is involved. Please take time to read the following information carefully. Please feel free to ask me if there is anything that is not clear or if you would like to know more information.

What is the research about?

The research forms part of an on-going enquiry into infection control practices in Thailand and England in order to understand why health care associated infection rates are different. The outcomes from this study will be used to develop infection control guidelines by integrating best practices identified from paediatric nurses in both countries.

Why have I been chosen?

In order to study infection control practices, nurses who work in paediatric wards will be asked to participate in this study.

Who is involved in the study?

The study is led by a nurse who is a PhD research student from the Faculty of Health and Life Sciences at De Montfort University.

Do I have to take part?

Taking part in the study is entirely voluntary. You are free to withdraw from the study at any time and without giving a reason. If you decide to take part, you will be given this information sheet to keep and you will be asked to sign a consent form.

What is involved?

If you are willing to take part, you will be contacted by the researcher to discuss further arrangements. The study involves observations and interviews. You will be observed in practice by the researcher for 2 days and then interviewed for around 1 hour. The observations will involve the researcher following the nurse for the duration of the shift, taking notes on all infection control related activities undertaken. If you would like to see the data collection sheet please contact the

researcher. The interview will focus on the nurses attitudes towards preventing infection.

What happens to the information?

All data is anonymous and confidential. However, if poor practice is observed during the observations I am obliged by the NMC Code of Professional Conduct to pass this information on to the ward manager. No one will be able to identify you from the study. The notes, tapes and transcripts will be kept securely and only the researcher and will have access to them. De Montfort University, University Ethics Committee, may ask to see the data to ensure it is being stored appropriately. Notes, tapes and transcripts will have codes and no names will be attached in order to safeguard confidentiality. At the end of the research the tapes will be erased. All data will be treated in accordance with the current Data Protection Act 1998.

What if something goes wrong?

It is unlikely you will be harmed during this study. If you wish to complain, or have any concerns about any aspect of the way you have been approached or treated during the course of this study, the normal National Health Service complaints mechanisms will be available to you.

What if I wish to complain?

If you have any difficulties or questions, please contact the researcher Susheewa Wichaikull on 0116 254 2491 (8am-4pm weekdays) or e-mail susheewa.wichaikull@learner.dmu.ac.uk . If you want to make a formal complaint , please contact Professor Judith Tanner at De Montfort University & University Hospitals of Leicester, Charles Frears Campus, 266 London Road, Leicester LE2 1RQ or 0116 2013885 or e-mail jtanner@dmu.ac.uk.

What will happen to the results of the study?

Upon the completion of the research the findings will be published as a thesis and held in De Montfort University Library. Articles will also be submitted for publication in nursing journals. The findings will be used to develop practice guidelines. The researcher will offer to give presentations based on the study to each participating hospital.

Who is organising and funding the study?

The study is organised by a research student in the Faculty of Health and Life Science at De Montfort University. The study has been approved by the University Hospitals of Leicester Research Ethics Committee.

Who has reviewed this study?

- Faculty of Health and Life Science Ethical Committee DMU.
- Leicester NHS research ethics committee
- Permission has also been obtained from UHL paediatric unit.
- University Hospitals of Leicester NHS Trust Research and Development Department

Contact for further information

If you would like any further information about the study please telephone Susheewa Wichaikull at the number provided on the last page. Thank you for taking the time to read this information sheet.

What should I do if I want to participate?

If you would like to participate in this research project please complete and return the form below or telephone or email Susheewa Wichaikull using the contact details at the bottom of this sheet. The researcher will then contact you to discuss the study and provide further information.

Yours sincerely,

Susheewa Wichaikull
Researcher (PhD student)

A comparison of the factors which influence infection control in paediatric wards in England and Thailand.

To Researcher

I would like to take part in this research.

Please contact me at.....

Name	Date	Signature
------	------	-----------

Susheewa Wichaikull: Contact details

Postal address: Susheewa Wichaikull c/o Prof Judith Tanner
266 London Road
Leicester
LE2 1RQ

Email susheewa.wichaikull@learner.dmu.ac.uk

Telephone (0116)254-2491

Appendix- 2.2 Participant information sheet Thai version 20 July 2008

หนังสือเชิญเข้าร่วมโครงการวิจัย (Participant Information Sheet)

เรื่อง การศึกษาเปรียบเทียบปัจจัยที่มีผลต่อการเฝ้าระวังการติดเชื้อในหอผู้ป่วยเด็กระหว่างประเทศไทยและประเทศอังกฤษ

: A comparison of the factors which influence infection control in paediatric wards in England and Thailand.

เรียน พยาบาลวิชาชีพทุกท่าน

ท่านได้รับเชิญให้เป็นส่วนหนึ่งในการศึกษาวิจัยเกี่ยวกับปัจจัยที่ส่งผลกระทบต่อ การเฝ้าระวังการติดเชื้อในเด็กระหว่างประเทศไทยและประเทศอังกฤษ กรุณาอ่านรายละเอียดและพิจารณาโครงการนี้ อย่างรอบคอบก่อนที่ท่านจะตัดสินใจเข้าร่วมโครงการ และหากท่านมีข้อสงสัยเกี่ยวกับหรือต้องการข้อมูลเพิ่มเติม ผู้วิจัยมีความยินดีจะให้ความกระจ่างกับท่านในทุกเรื่องที่ท่านต้องการ

การศึกษาเปรียบเทียบปัจจัยที่มีผลต่อการเฝ้าระวังการติดเชื้อในหอผู้ป่วยเด็กระหว่างประเทศไทยและประเทศอังกฤษ เป็นการศึกษาปัจจัยต่างๆที่มีผลต่อการเฝ้าระวังการติดเชื้อในเด็กไม่ว่าจะทางตรงหรือทางอ้อม ตัวอย่างเช่นปัจจัยที่ทำให้การเฝ้าระวังการติดเชื้อประสบความสำเร็จ ไม่ว่าจะเป็นนโยบาย การปฏิบัติการพยาบาล หรือการแก้ปัญหาที่อาจเหมือนหรือต่างกัน ระหว่างประเทศที่มีสิ่งแวดล้อมและวัฒนธรรมที่ต่างกัน โดยมุ่งเน้นไปที่การปฏิบัติการที่ดี (Best Practice) ซึ่งผลที่ได้รับจากการศึกษาในครั้งนี้คาดว่าจะสามารถนำมาพัฒนาต่อโดยการบูรณาการข้อดี (Best practice) ที่ได้จากสองประเทศเพื่อนำไปใช้ในเรื่องการเฝ้าระวังการติดเชื้อในเด็กที่มีประสิทธิภาพต่อไปในอนาคต

ระหว่างการวิจัย ผู้วิจัยจะติดตามสังเกตการบทบาททำงานของท่านในการปฏิบัติการพยาบาลที่ท่านทำงานของท่านเป็นเวลาอย่างน้อยหนึ่งวัน หลังจากนั้นจะมีการนัดสัมภาษณ์ท่านอีกครั้งหลังจากการเสร็จสิ้นการสังเกตการณ์ โดยจะถามเกี่ยวกับทัศนคติและความเชื่อที่เกี่ยวข้องกับการปฏิบัติการเฝ้าระวังการติดเชื้อในเด็ก อย่างน้อยคนละหนึ่งชั่วโมง ตลอดการสังเกตการณ์ผู้วิจัยจะไม่เข้าไปยุ่งเกี่ยวกับ การปฏิบัติงานของท่านถึงแม้ว่าผู้วิจัยจะเป็นพยาบาลเช่นเดียวกันนอกจากจะมีการปฏิบัติกรใดใดที่เป็นอันตรายต่อชีวิตของผู้ป่วยและจำเป็นจะต้องได้รับการช่วยเหลืออย่างเร่งด่วน ซึ่งในระหว่างการศึกษา

ทุกข้อมูลที่ได้จากการศึกษาจะใช้เป็นรหัสกำกับ ไม่มีการใส่ชื่อและนามสกุลจริงของท่านลงใน รายงาน หรือเอกสารที่ตีพิมพ์ ตลอดจนเทปที่บันทึกเสียงจากการสัมภาษณ์จะถูกเก็บเอาไว้ในที่ที่ปลอดภัยไม่สามารถเข้าถึงได้ง่ายก่อนจะมีการทำลายหลังจากเสร็จสิ้นการวิจัย ทุกข้อมูลจะถูกเก็บรักษาภายใต้กรอบของกฎหมาย (Data Protection Act 1998) และเพื่อความถูกต้องของข้อมูลที่ได้จากการสัมภาษณ์ผู้วิจัยจะ让您ได้ตรวจสอบข้อมูลที่ได้จากการถอดเทปก่อนที่จะนำมาเขียนรายงาน โดยใช้รหัสแทนชื่อและนามสกุลจริง ผู้ที่จะสามารถขอข้อมูลได้จะมีเพียงคณะกรรมการวิจัยจากหน่วยงานของท่าน และจากมหาวิทยาลัย De Montfort and University Hospitals of Leicester NHS Trust เท่านั้น

ถ้าหากว่ามีเหตุการณ์ใดใดที่เป็นอันตรายต่อชีวิตผู้ป่วย ผู้วิจัยอาจส่งต่อไปยังหัวหน้างานที่เกี่ยวข้องเพื่อประโยชน์ต่อหน่วยงานของท่านตามขั้นตอนและตามระเบียบการทำงานของโรงพยาบาลต่อไป ถ้าท่านรู้สึกไม่สบายใจหรืออึดอัด ท่านมีสิทธิที่จะถอนตัวออกจากการศึกษา ตลอดเวลา และถ้าท่านมีความประสงค์จะร้องเรียน ท่านก็สามารถที่จะร้องเรียนได้ที่ผู้ประสานงานวิจัยในหน่วยงานของท่านหรือจะติดต่อไปโดยตรงที่ผู้วิจัยได้เช่นเดียวกัน

หลังจากที่ท่านอ่านรายละเอียดจากเอกสารฉบับนี้แล้ว และสนใจจะร่วมโครงการท่านสามารถแจ้งความจำนงค์ของท่านมาที่ผู้ประสานงานวิจัยหรือผู้วิจัยได้โดยตรง หลังจากนั้นผู้วิจัยจะติดต่อกลับไปเพื่อให้ท่านได้เซ็นต์ยินยอมเพื่อเข้าร่วมโครงการก่อนที่จะเข้าไปสังเกตการณ์การทำงานของท่าน ถ้าท่านรู้สึกไม่สบายใจหรืออึดอัด ท่านมีสิทธิที่จะถอนตัวออกจากการศึกษา ตลอดเวลา

ขอขอบพระคุณอย่างสูงในความร่วมมือ,

สุชีวา วิชัยกุล

ผู้วิจัย (PhD student)

A comparison of the factors which influence infection control in paediatric wards in England and Thailand.

การศึกษาเปรียบเทียบปัจจัยที่มีผลต่อการเฝ้าระวังการติดเชื้อในหอผู้ป่วยเด็กระหว่างประเทศไทยและประเทศอังกฤษ

ถึง ผู้วิจัย

ข้าพเจ้ามีความประสงค์จะเข้าร่วมโครงการวิจัยในครั้งนี้

กรุณาติดต่อข้าพเจ้าได้ที่

_____	_____	_____
Name	Date	Signature

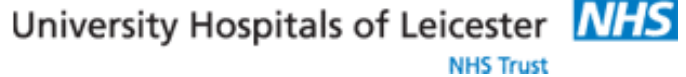
Susheewa Wichaikull: Contact details

Postal address: สุชีวา วิชัยกุล c/o Prof. Judith Tanner and ศจ. วิณา จีระแพทย์
19/147 ม. 11 ซอย เลียบวารี 17 แขวง โลกแฝด
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e-mail susheewa.wichaikull@learner.dmu.ac.uk or susheewa@yahoo.com

Telephone (02)540-6500, 084 3205409

Appendix- 3.1 Consent form English version 2, 20 May 2008



CONSENT FORM

Title of Project: A comparison of the factors which influence infection control in paediatric wards in England and Thailand

Name of Researcher: Susheewa Wichaikull

1. I confirm that I have read and understand the information sheet dated 20 May 2008, version 2 for the above study. I have had the opportunity to consider the information, ask questions and have had these answered satisfactorily.
2. I understand that my participation is voluntary and that I am free to withdraw at any time, without giving any reason, without my medical care or legal rights being affected.
3. I understand that relevant sections of any of data collected during the study, may be looked at by responsible individuals from the DMU research committee from regulatory authorities or from the NHS Trust Research committee, where it is relevant to my taking part in this research. I give permission for these individuals to have access to this data for monitoring purposes.
4. I agree to take part in the above study.

_____ Name of participant	_____ Date	_____ Signature
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_____ Name of Person taking consent (if different from researcher)	_____ Date	_____ Signature
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_____ Researcher	_____ Date	_____ Signature
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ใบยินยอมด้วยความสมัครใจของอาสาสมัคร

ข้าพเจ้า.....ขอแสดงเจตนายินยอมเข้าร่วมโครงการวิจัยเรื่อง การศึกษาเปรียบเทียบปัจจัยที่มีผลต่อการเฝ้าระวังการติดเชื้อในผู้ป่วยเด็กระหว่างประเทศไทยและประเทศอังกฤษ ก่อนที่จะลงนามในใบยินยอมเข้าร่วมการวิจัยนี้ ข้าพเจ้าได้ทราบรายละเอียดเกี่ยวกับที่มา จุดมุ่งหมายการวิจัยตลอดจนรายละเอียดขั้นตอนต่างๆ ที่ต้องปฏิบัติหรือได้รับการปฏิบัติ ความเสี่ยงหรือผลกระทบ รวมทั้งประโยชน์ที่จะเกิดขึ้นจากการวิจัย รวมทั้งแนวทางป้องกัน อย่างละเอียดและมีความเข้าใจดีแล้ว โดยได้อ่านจากคำชี้แจงอาสาสมัคร (Information Sheet) และจากคำอธิบายและตอบข้อสงสัยจากหัวหน้าโครงการวิจัยโดยตรง

ข้าพเจ้าจึงสมัครใจเข้าร่วมในโครงการวิจัยนี้ด้วยความสมัครใจ

หากข้าพเจ้ามีข้อข้องใจเกี่ยวกับขั้นตอนการวิจัย หรือหากเกิดผลข้างเคียงที่ไม่พึงประสงค์

ข้าพเจ้าจะได้รับการดูแลและได้รับความช่วยเหลือจากผู้วิจัยคือ นางสุชีวา วิชัยกุล สถานที่ติดต่อ 19/147 แขวง โกลด์ แพลด เขตหนองจอก กรุงเทพมหานคร เบอร์โทรศัพท์ 0843205409 ตลอด 24 ชั่วโมง

หากข้าพเจ้าได้รับการปฏิบัติไม่ตรงตามที่ได้ระบุไว้ในเอกสารชี้แจงผู้เข้าร่วมการวิจัย ข้าพเจ้าจะสามารถติดต่อกับเลขานุการคณะกรรมการพิจารณาศึกษาวิจัยในมนุษย์ของสถาบันสุขภาพเด็กแห่งชาติมหาราชินี ศูนย์วิจัยและพัฒนา ชั้น 12 อาคารสถาบันสุขภาพเด็กแห่งชาติมหาราชินี เบอร์โทร 02-6445943 เบอร์ภายใน 02-3548333 ถึง 43 ต่อ 5210,5211

หากข้าพเจ้าได้รับทราบถึงสิทธิ์ที่จะได้รับข้อมูลเพิ่มเติมทั้งด้านประโยชน์และโทษจากการเข้าร่วมวิจัยและสามารถถอนตัวจากการศึกษานี้ได้ทุกเมื่อโดยไม่มีผลกระทบใดใดต่อหน้าที่และการบริการที่ข้าพเจ้าได้รับ โดยผู้วิจัยรับรองว่าจะเก็บข้อมูลเกี่ยวกับข้าพเจ้าเป็นความลับและจะเปิดเผยได้เฉพาะในรูปที่เป็นสรุปการวิจัยหรือการเปิดเผยข้อมูลต่อผู้ที่มีหน้าที่เกี่ยวข้องกับการสนับสนุนและกำกับดูแลการวิจัยเท่านั้น

ข้าพเจ้าได้เข้าใจข้อความในเอกสารชี้แจงผู้เข้าร่วมการวิจัยและหนังสือแสดงเจตนายินยอมนี้โดยตลอดแล้ว จึงลงลายมือชื่อไว้

ลงชื่อ.....ผู้เข้าร่วมการวิจัย/

วันที่.....

ลงชื่อ.....หัวหน้าโครงการวิจัย/

วันที่.....

Appendix- 4 Participant observation checklist

Topic	Do	Do not
<p>standard principles of hand hygiene</p> <ul style="list-style-type: none"> • Hand must be decontaminated immediately before each and every episode of direct patient contact/care and after any activity or contact that could potentially result in hands becoming contaminated Hands that are visibly soiled or potentially grossly contaminated with dirt or organic material must be washed with liquid soap and water. • Apply an alcohol-based hand rub or wash hands with liquid soap if hands are visibly soiled, between caring for different patients and between different care activities for the same patient. • Remove all wrist and hand jewellery before regular hand decontamination. Cuts and abrasions must be covered with waterproof dressings. Fingernails should be kept short, clean and free from nail polish. • An effective hand-washing technique involves three stages: preparation, washing and rinsing, and drying. Preparation requires wetting hands under tepid running water before applying liquid soap or and antimicrobial preparation. The hand wash solution must come into contact with all of the surfaces of the hand. The hands must be rubbed together vigorously for a minimum of 10 to 15 seconds, paying particular attention to the tips of the fingers, the thumbs and the areas between the fingers. Hands should be rinsed thoroughly before drying with good quality paper towels. • When decontaminating hands using an alcohol hand rub, hands should be free from dirt and organic material. The hand rub solution must come into contact with all surfaces of the hand. The hands must be rubbed together vigorously, paying particular attention to the tips of the fingers, the thumbs and the areas between the fingers, until the solution has evaporated and the hands are dry. • An emollient and cream should be applied regularly to protect skin from the drying effects of regular hand decontamination. If a particular soap, antimicrobial hand wash or alcohol product causes skin irritation an occupational health team should be consulted. 		

Topic	Do	Do not
<p>Safe disposal sharps</p> <ul style="list-style-type: none"> • Sharps must not be passed directly from hand to hand and handling should be kept to a minimum. • Needles must not be recapped, bent or broken prior to use or disposal. • Needles and syringes must not be disassembled by hand prior to disposal. • Used sharps must be discarded into a sharps container (conforming to UN3291 and BS7320 standards) at the point of use. These must not be filled above the mark indicating that they are full. • Containers in public areas must not be placed on the floor and should be located in a safe position. • Consider the use of needlestick-prevention devices where proper risk assessment indicates that they are likely to reduce the risk of injury. • Conduct a rigorous evaluation of needlestick-prevention devices to determine their effectiveness, acceptability to practitioners, impact on patient care, and cost-benefit prior to widespread introduction. 		

Topic	Do	Do not
<p>The use of personal protective equipment</p> <ul style="list-style-type: none"> • Select protective equipment on the basis of an assessment of the risk of transmission of micro-organisms to the patient, and the risk of contamination of healthcare practitioners' clothing and skin by patients' blood, body fluids, secretions and excretions. • Gloves must be worn for invasive procedures, contact with sterile sites, and non-intact skin, mucous membranes, and all activities that have been assessed as carrying a risk of exposure to blood, body fluids, secretions and excretions; and when handling sharp or contaminated instruments. • Gloves should be worn as single use items. Put gloves on immediately before an episode of patient contact or treatment and remove them as soon as the activity is completed. Change gloves between caring for different patients or between different care/treatment activities for the same patient. • Gloves must be disposed of as clinical waste and hands should be decontaminated following the removal of gloves. • Gloves conforming to European Community (CE) standards and of an acceptable quality must be available in all clinical areas. • Alternatives to natural rubber latex (NRL) gloves must be available for use by practitioners and patients with NRL sensitivity. • Powdered and polythene gloves should not be used in healthcare activities. • Disposable plastic aprons should be worn when there is a risk that clothing or uniform may become exposed to blood, body fluids, secretions and excretions, with the exception of sweat. • Full body, fluid repellent gowns should be worn where there is a risk of extensive splashing of blood, body fluids, secretions and excretions, with the exception of sweat, on to the skin of healthcare practitioners. • Plastic aprons should be worn as single use items for one procedure or episode of patient care and then discarded and disposed of as clinical waste. • Face mask and eye protection should be worn where there is a risk of blood, body fluids, secretions and excretions splashing into the face and eyes. <p>Respiratory protective equipment should be used when clinically indicated.</p>		

Topic	Do	Do not
<p>Care of patients with long-term urinary catheters</p> <ul style="list-style-type: none"> • Urinary catheters should only be used when there is no suitable alternative, and even then kept in place for as short a time as possible. • Where long-term indwelling use is unavoidable, a catheter of low allergenicity will be used. • Urinary catheter insertion, manipulation, washing out, urine sampling and removal will be undertaken by trained and competent staff using strictly aseptic techniques. • Patients and carers will be educated in catheter maintenance with an emphasis on the techniques for reducing risk of infection. • The date of insertion and date of removal of the device will be documented in the clinical record as a matter of routine. 		

Topic	Do	Do not
<p>Care of patients with central venous catheters</p> <ul style="list-style-type: none"> • Central venous line insertion, manipulation, and removal will be undertaken by trained and competent staff using strictly aseptic techniques. • Central venous line catheters will not be replaced over a guide wire if infection is present. • A dedicated occlusive transparent dressing will be used to allow continuous inspection of the exit site and will be changed at no later than seven days. • The date of insertion and date of removal of the device will be documented in the clinical record as a matter of routine. 		

Topic	Do	Do not
<p>Care of patients during enteral feeding</p> <p>Preparation and storage of feeds</p> <ul style="list-style-type: none"> • Wherever possible pre-packaged, ready-to-use feeds should be used in preference to feeds requiring decanting, reconstitution or dilution. • The system selected should require minimal handling to assemble, and be compatible with the patient's enteral feeding tube. • Effective hand decontamination must be carried out before starting feed preparation. • When decanting, reconstituting or diluting feeds, a clean working area should be prepared and equipment dedicated for enteral feed use only should be used. • Feeds should be mixed using cooled boiled water or freshly opened sterile water and a no-touch technique. • Feeds should be stored according to manufacturer's instructions and, where applicable, food hygiene legislation. • Where ready-to-use feeds are not available, feeds may be prepared in advance, stored in a refrigerator, and used within 24 hours. <p>Administration of feeds</p> <ul style="list-style-type: none"> • Minimal handling and an aseptic no-touch technique should be used to connect the administration system to the enteral feeding tube. • Ready-to-use feeds may be given for a whole administration session, up to a maximum of 24 hours. Reconstituted feeds should be administered over a maximum four-hour period. • Administration sets and feed containers are for single use and must be discarded after each feeding session. <p>Care of insertion site and enteral feeding tube</p> <ul style="list-style-type: none"> • The stoma should be washed daily with water and dried thoroughly. • To prevent blockage, the enteral feeding tube should be flushed with fresh tap water before and after feeding or administering medications. Enteral feeding tubes for patients who are immunosuppressed should be flushed with either cooled freshly boiled water or sterile water from a freshly opened container. 		
Topic	Do	Do not
<p>Care of patients during parenteral feeding</p> <ul style="list-style-type: none"> • Intravenous feeding lines will only be used when there is no suitable alternative, and even then kept in place for as short a time as possible. • Insertion, manipulation, and removal of intravenous feeding lines will be undertaken by trained and competent staff using strictly aseptic techniques. • A dedicated line or lumen of a multi-channel line will be used. No other infusion or injection will go via this route. Three-way taps will not be used. 		

<ul style="list-style-type: none"> • Any additives to intravenous fluid containers will be introduced aseptically in a unit or safety cabinet designed for the purpose, by trained staff using strictly aseptic techniques. • Intravenous feeding cannulae insertion sites will be regularly inspected for signs of infection and the cannula removed if infection is suspected. • The date of insertion and date of removal of the device will be documented in the clinical record as a matter of routine. 		
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Topic	Do	Do not
<p>Care of patients with peripheral intravenous cannulae</p> <ul style="list-style-type: none"> • Intravenous cannulae insertion should be carried out by trained and competent staff using strictly aseptic techniques. • The number of lines, lumens and stopcocks will be kept to the absolute minimum consistent with clinical need. • Peripheral intravenous cannulae insertion sites will be regularly inspected for signs of infection and the cannula removed if infection is suspected. • Peripheral intravenous cannulae will be kept in place for the minimum the necessary and changed every 72 hours irrespective of the presence of infection. • Administration sets will be changed immediately following a blood transfusion, intravenous feed or at 24 hours (whichever is sooner). For other clear fluids, change will occur at 72 hours. • The date of insertion and date of removal of the device will be documented in the clinical record as a matter of routine. 		

Topic	Do	Do not
<p>Care of patients on respiratory support systems</p> <ul style="list-style-type: none"> • Ventilator tubing will only be changed when visibly soiled or malfunctioning. • Gloves will be worn for handling respiratory secretions or contaminated objects. • Gloves and appropriate personal protection will be used when aspiration respiratory secretions. • Hands will be decontaminated after glove removal. • The date of insertion and date of removal of the device will be documented in the clinical record as a matter of routine. 		

Topic	Do	Do not
<p>Action areas and guidelines for the prudent use of antimicrobials</p> <ul style="list-style-type: none"> • Antimicrobials will normally be used only after a treatable infection has been recognized or there is a high degree of suspicion of infection. • Choice of antimicrobial will normally be governed by local information about trends in antimicrobial resistance or a known sensitivity of the organism. • Antimicrobials will only be taken by patients over the prescribed period at the correct dose. • Prescription of antimicrobials for children will be carefully considered; they are often unnecessarily prescribed for common viral infections and the child is subsequently more likely to develop a resistant infection. • Support for prudent antimicrobial prescribing in hospitals will be provided by the clinical pharmacists, medical microbiologists and infectious diseases physicians on the staff. • Antimicrobials will be used for prevention of infection only where benefit has been proven. • Narrow spectrum antimicrobials will be preferred to the broad spectrum groups. 		

Topic	Do	Do not
<p>Health education for parents and relatives</p> <ul style="list-style-type: none"> • Inform parents and relatives regarding hand-washing correctly before they have participation in nursing. • Inform parents and relatives regarding food hygiene. • Inform parents and relatives regarding environment hygiene. • Inform parents and relatives regarding toys • Inform parents and relatives regarding cross-infection between patient to another patient 		

Topic	Do	Do not
<p>Isolation guideline</p> <ul style="list-style-type: none"> • The immune suppressed patients or children who are at risk of low resistance-disease, burns, trauma, drugs or irradiation treatment- should be isolated in the single room which separate toilet and bath facilities. • The immune suppressed patients should be monitored as high standard to prevent infection. • MRSA patients should be separated in the single room in 		

<p>order to prevent cross infection to other patients</p> <ul style="list-style-type: none"> • There are leaflet s or posters to remind visitors such as ‘ all visitors must report to nurse- in-charge before entering’ • Protective clothing should be provided. • Disposal of waste should be separated from other waste. 		
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Topic	Do	Do not
<p>Wound care</p> <ul style="list-style-type: none"> • Patients who have wound should be taken a great care with aseptic procedures. • Before attending to a burnt patient gown and mask should be put on to prevent contamination. • A disposable paper cap should be worn, particularly when the wound is exposed, to reduce dispersal or organism which may infect the wound. 		

Topic	Do	Do not
<p>The patients’ environment</p> <ul style="list-style-type: none"> • Identify the ‘at risk’ patient and take relevant additional precaution. • Keep environment as dry and clean as possible. • Remove all spillages of human excretions and secretions promptly. • Do not use disinfectants unnecessarily. • Ensure that cleaning methods are microbiologically safe. • Limit the number of people present to minimum necessary for the treatment and comfort of the patients. • Monitor and clean toys in clinical setting. 		

Topic	Do	Do not
<p>Training ,updating knowledge and healthcare behaviour</p> <ul style="list-style-type: none"> • Infection control training should be provided for clinical nurses. • Clinical nurses are able to identify infection in children correctly. • Clinical nurse comply infection control guideline consistency. • Clinical nurses usually read news or articles regarding infection disease and nursing practice. 		

Appendix- 5 Interview Schedule

Semi-structure Interviews

What do you think about the factors which influence infection control in nursing practices particularly in children?

.....

.....

Overview Categories

- Policy
- Guideline
- Compliance
- Difficulties for non-compliance
- Intrinsic factors
- Invasive treatment
- Bed capacity and isolation
- Antibiotic used
- Nurses and patient ratio
- Equipment management
- Waste product management
- Environment
- Food hygiene
- Model of nursing practice
- Culture
- Training and self directed learning
- Difficulties
- Suggestion and recommendation

Appendix- 6.1 Research study poster in English version

Version2, 15 August 2008

DE MONTFORT UNIVERSITY

Research study 'Factors which influence infection control in paediatric wards'

A research study exploring nurses' attitudes to preventing infections is being undertaken on this ward.

The study involves nurses being observed by a nursing research student. The researcher is watching the nurses and taking notes on what they do. The nurses will be watched while they are caring for your child all times including behind curtains. However the researcher will not take any notes about your child or document anything about them which will make them identifiable. If you do not want the researcher to observe nurses caring for your child, then please contact Susheewa Wichaikull using the details given below.

If you would like more details about the study please contact researcher.

This study has been approved by the National Research Ethics Service (NRES). Susheewa Wichaikull is a PhD student at De Montfort University and is supervised by Professor Judith Tanner.

Susheewa Wichaikull – contact details

Postal address: Susheewa Wichaikull c/o Prof Judith Tanner
266 London Road
Leicester
LE2 1RQ

Email susheewa.wichaikull@email.dmu.ac.uk or susheewa@yahoo.com
Telephone (0116)254-2491

Appendix- 6.2 Research study poster in Thai version

Version 1, 27 June 2008

DE MONTFORT UNIVERSITY

การศึกษาเรื่อง
‘การศึกษาร่วมแบบเทียบเคียงที่ส่งผลต่อการฝ่า
วังการติดเชื้อในผู้ป่วยเด็ก’

การศึกษาวิจัยนี้มุ่งเน้นศึกษาการพยาบาลและทัศนคติของพยาบาลในการฝ่าวังการติดเชื้อในผู้ป่วยเด็ก

การศึกษานี้มุ่งเน้นไปที่พยาบาลที่ให้การพยาบาลกับเด็กโดยการสังเกตการปฏิบัติพยาบาลและโดยไม่ได้บันทึกเกี่ยวกับผู้ป่วยเด็ก อย่างไรก็ตามถ้าท่านไม่ต้องการให้มีการสังเกตการณ์ขณะที่พยาบาลกำลังให้การพยาบาลบุตรหลานของท่าน ท่านก็สามารถแจ้งความเจตนาให้กับผู้วิจัยได้

หรือถ้าท่านต้องการทราบรายละเอียดเพิ่มเติมเกี่ยวกับการศึกษาวิจัยนี้ท่านสามารถติดต่อผู้วิจัยได้

ซึ่งการศึกษาวิจัยนี้ได้ผ่านการพิจารณาจากคณะกรรมการจริยธรรมการวิจัยจากกรมการวิจัยเรียบร้อยแล้ว

ผู้วิจัย สุชีวา วิชัยกุล – รายละเอียดที่สามารถติดต่อได้

ที่อยู่ 681 วิทยาลัยพยาบาลบรมราชชนนีนครศรีธรรมราช
 รามอินทรา กม 12 เขมวงคันนายาว
 กรุงเทพมหานคร 10230

Email susheewa.wichaiakull@email.dmu.ac.uk or susheewa@yahoo.com
Telephone (084)320-5409

Appendix- 7 Research leaflet (Front)

Version2, 15 August 2008

University Hospitals of Leicester
NHS Trust



What is this study?

'Factors which influence infection control in paediatric wards'



If you would like more details about the study please contact Susheewa Witchaikull.



CONTACT RESEARCHER

De Montfort University & University Hospitals of Leicester, Charles Frears Campus, 286 London Road, Leicester LE2 1RQ or 0116 2013885 or e-mail susheewa.witchaikull@email.dmu.ac.uk or susheewa@yahoo.com or tanner@dmu.ac.uk

Research leaflet (back)

Version2, 15 August 2008

'Factors which influence infection control in paediatric wards'

Aims of this study A research study exploring nurses' attitudes to preventing infections is being undertaken on this ward.

The study involves nurses being observed by a nursing research student. The researcher is watching the nurses and taking notes on what they do. The nurses will be watched while they are caring for your child all times including behind curtains. However the researcher will not take any notes about your child or document anything about them which will make them identifiable. If you do not want the researcher to observe the nurses caring for your child then please contact Susheewa Witchaikul using the details given in this leaflet.



Parents who do not wish their children to be included can opt out.

This study has been approved by the National Research Ethics Service (NRES). Susheewa Witchaikul is a PhD student at De Montfort University and is supervised by Professor Judith Tanner.

Appendix- 8.1 Ethical approval granted by DMU



Friday 29th June 2007

Susheewa Witchaikull
School of Nursing and Midwifery

Dear Susheewa,

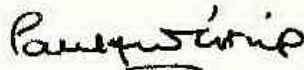
Re: Ethics application – A comparison of the factors which influence infection control in paediatric wards in England and Thailand (ref: 205)

I am writing regarding your application for ethical approval for a research project titled to the above project. This project has been reviewed in accordance with the Operational Procedures for De Montfort University Faculty of Health and Life Sciences Research Ethics Committee. These procedures are available from the Faculty Research and Commercial Office upon your request.

I am pleased to inform you that ethical approval has been granted by Chair's Action for your application. This will be reported at the next Faculty Research Committee, which is being held in October 2007.

Should there be any amendments to the research methods or persons involved with this project you must notify the Chair of the Faculty Research Ethics Committee immediately in writing. Serious or adverse events related to the conduct of the study need to be reported immediately to your Supervisor and the Chair of this Committee. Also, The Faculty Research Ethics Committee should be notified by e-mail to HLSFRO@dmu.ac.uk when your research project has been completed.

Yours sincerely,



Professor Paul Whiting
Chair
Faculty of Health and Life Sciences
Research Ethics Committee

Appendix- 8.2 Ethical approval granted by the NRES



National Research Ethics Service

Leicestershire, Northamptonshire & Rutland Research Ethics Committee 1

1 Standard Court
Park Row
Nottingham
NG1 6GN

Telephone: 0115 912 3344 ext 39428
Facsimile: 0115 9123300

15 August 2008

Mrs Susheewa Wichaikul
PhD student
De Montfort University
134 Grasmere St
Leicester
LE2 7FS

Dear Mrs Wichaikul

Full title of study: A comparison of the factors which influence infection control in paediatric wards in England and Thailand
REC reference number: 08/H0406/90

Thank you for your letter of 15 August 2008, responding to the Committee's request for further information on the above research and submitting revised documentation, subject to the conditions specified below.

The further information has been considered on behalf of the Committee by the Chair.

Confirmation of ethical opinion

On behalf of the Committee, I am pleased to confirm a favourable ethical opinion for the above research on the basis described in the application form, protocol and supporting documentation as revised.

Ethical review of research sites

The Committee has designated this study as exempt from site-specific assessment (SSA). There is no requirement for [other] Local Research Ethics Committees to be informed or for site-specific assessment to be carried out at each site.

Conditions of the favourable opinion

The favourable opinion is subject to the following conditions being met prior to the start of the study.

Management permission or approval must be obtained from each host organisation prior to the start of the study at the site concerned.

Management permission at NHS sites ("R&D approval") should be obtained from the relevant care organisation(s) in accordance with NHS research governance arrangements. Guidance on applying for NHS permission is available in the Integrated Research Application System or at <http://www.rdforum.nhs.uk>.

This Research Ethics Committee is an advisory committee to East Midlands Strategic Health Authority. The National Research Ethics Service (NRES) represents the NRES Directorate within the National Patient Safety Agency and Research Ethics Committees in England.

Approved documents

The final list of documents reviewed and approved by the Committee is as follows:

<i>Document</i>	<i>Version</i>	<i>Date</i>
Application	AB/107766/1	14 April 2008
Investigator CV: : Supervisor		
Investigator CV		
Protocol	1	29 February 2008
Letter from Sponsor		15 April 2008
Peer Review		17 April 2007
Interview Schedules/Topic Guides		
Participant Information Sheet	2	20 May 2008
Participant Consent Form	2	20 May 2008
Response to Request for Further Information		14 April 2008
Response to Request for Further Information		15 August 2008
Leaflet	2	15 August 2008
Research Study Poster	2	15 August 2008
Approval Letter from De Montfort University REC		29 June 2007
Response to Peer Review		17 April 2007

Statement of compliance

The Committee is constituted in accordance with the Governance Arrangements for Research Ethics Committees (July 2001) and complies fully with the Standard Operating Procedures for Research Ethics Committees in the UK.

After ethical review

Now that you have completed the application process please visit the National Research Ethics Website > After Review

You are invited to give your view of the service that you have received from the National Research Ethics Service and the application procedure. If you wish to make your views known please use the feedback form available on the website.

The attached document "After ethical review – guidance for researchers" gives detailed guidance on reporting requirements for studies with a favourable opinion, including:

- Notifying substantial amendments
- Progress and safety reports
- Notifying the end of the study

The NRES website also provides guidance on these topics, which is updated in the light of changes in reporting requirements or procedures.

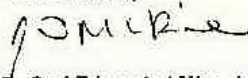
We would also like to inform you that we consult regularly with stakeholders to improve our service. If you would like to join our Reference Group please email referencegroup@nres.npsa.nhs.uk.

08/H0406/90

Please quote this number on all correspondence

With the Committee's best wishes for the success of this project

Yours sincerely



**Dr Carl Edwards / Miss Jeannie McKie
Chair / Committee Coordinator**

Email: jeannie.mckie@notspct.nhs.uk

Enclosures: "After ethical review – guidance for researchers" SL- AR2

Copy to: Professor Paul Whiting, De Montfort university
R&D office for NHS care organisation at lead site - UHL

Appendix- 8.3 Ethical approval granted by the NHS

DIRECTORATE OF RESEARCH & DEVELOPMENT

Research & Development Office
Leicester General Hospital
Gwendolen Road
Leicester
LE5 4PW

Director: Professor D Rowbotham

Assistant Director: John Hampton

R&D Manager: Carolyn Burden

Direct Dial: (0116) 258 8351

Fax No: (0116) 258 4226

20/03/2009

Mrs Susheewa Wichaikull
134 Grasmere Street
Leicester
LE2 7FS

Dear Mrs Susheewa Wichaikull

Ref: **UHL 10550**

Title: A comparison of the factors which influence infection control in paediatric wards in England and Thailand

Project Status: **Project Approved**

End Date: 31/05/2010

Thank you for submitting documentation for Non-Substantial amendment – Extending areas of investigation to include the Childrens Intensive Care Unit, Ward 11 and 14, for the above study.

I confirm that the amendment has the approval of the University Hospitals of Leicester NHS Trust R&D Department and may be implemented with immediate effect.

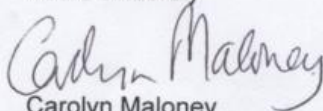
The documents received are as follows:

Document Name	Version Number	Date
Letter of Support from Head of Nursing		03.02.2009
Notification of Minor Amendment	1	17.02.2009
Protocol	1	29.02.2008

Please be aware that any changes to these documents after approval may constitute an amendment. The process of approval for amendments should be followed. Failure to do so may invalidate the approval of the study at this trust.

Please ensure that all documentation and correspondence relating to this amendment are filed appropriately in the relevant site file.

Yours sincerely




Carolyn Maloney
R&D Manager

Appendix- 8.4 Ethical approval granted by children hospital in Thailand

EC.07E

Document No EC.034/2008



The Research Ethic Review Committee of
Queen Sirikit National Institute of Child Health (Children's Hospital)

November 11, 2008

Title of Project : A comparison of the factors which influence infection control in paediatric wards
in England and Thailand

Protocol Number : Document No 52-011

Principal Investigator: Mrs.Susheewa Wichaikul

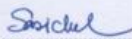
Place of Proposed Study : Queen Sirikit National Institute of Child Health (Children's Hospital)

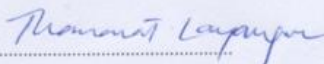
Project Time line : November 15, 2008 – December 10, 2008

Reviewed Document:

1. Protocol Proposal Thai Version 2 (11/11/2008)
2. Participant Information Sheet (Version 2,11 Nov 2008)
3. Consent Form (Version 2,11 Nov 2008)
4. Assent Form (Version 2,11 Nov 2008)
5. Curriculum Vitae

The Research Ethic Review Committee of Queen Sirikit National Institute of Child Health (Children's Hospital) has approved the aforementioned protocol for implementation of the research study. Date of Approval November 11, 2008 Date of Expiration November 10, 2009. The principal investigator (PI) must report the status of the project and apply for the continued approval annually before the anniversary date of approval throughout study period.


.....
(Miss Sasichol Kamproh)
Secretary of The Research Ethic Review Committee of
Queen Sirikit National Institute of Child Health (Children's Hospital)


.....
(Dr. Thanarat Layangool)
Vice Chairman of The Research Ethic Review Committee of
Queen Sirikit National Institute of Child Health (Children's Hospital)

R&D CENTER OF QSNICH
Tel./Fax. (+66) 0-2-644-8943

Date of Approval November 11, 2008 ; Date of Expiration November 10, 2009

Appendix- 8.5 Ethical Approval granted by the Nopparat Hospital in Thailand



CERTIFICATION OF INSTITUTIONAL ETHICS REVIEW

This is to certify that the Nopparat-rajathanee Hospital Research Ethics Board has examined the following research proposal and found the proposed research involving human subjects to be in accordance with the *Statement on Ethical Conduct in Research Involving Human Subjects*.

This form constitutes the Certification of Institutional Ethics Review

Applicant(s): Susheewa Wichaikull
Department/Faculty: PHD Student at De Monfort University
Project Title: A comparison of the factors which influence infection control in paediatric wards in England and Thailand
Sponsor (if applicable):

Restrictions:

This Certification is subject to the following conditions:

1. Approval is granted only for the project and purposes described in the application.
2. Any modifications to the authorized protocol must be submitted to the Nopparat-rajathanee Hospital Research Ethics Board for approval
3. Written notification must be sent to the Board when the project is complete or terminated

Nongnuj Sutheechet

Nongnuj Sutheechet

Chair

Nopparat-rajathanee Hospital Research Ethics Board

Appendix- 9 Sample of journals and transcriptions from observation and interviews

9.1 Observation Journal ID8-E

7.30-8.00 a.m. Participant (ID8E) is doing handover report with 5 other nurses, 1 health care assistant and another play specialist in the staff room from in-charge nurse who works on the night shift. There are 4 patients admitted in CICU today. After that nurses working on the day shift assign themselves to look after the patients. One nurse will look after one patient. Then she accesses the intensive care unit to get the individual handover from a nurse who looked after the patient on the night shift without changing her uniform and shoes. It takes around 30 minutes per case.

There are 5 patients' beds in that area and there are 3 cubicle rooms for the separated patient. There are nearly 30 nurses in this unit, both part time and full time. The unit is quite tidy and there is individual equipment for each patient such as monitor, pump and respirator. Pipe lines are provided over the bed and protective equipment such as gloves, masks and aprons are provided at the bedside. They use a different coloured apron in the next bed in order to remind nurses and staff that when they want to help another colleague in the next bed they need to change their gloves and apron before helping.

Before ID8 starts working, she washes her hands carefully with water and liquid soap for around 10 seconds without a ring on, and then she wears a plastic apron and disposable gloves before monitoring the vital signs and recording all fluids in her big chart which is on the bedside. While recording, she explains how she records everything into the chart for me as well, and she said I can help her to jot down sometime if she needs help.

Then she takes off her gloves and washes her hands with water before she prepares some equipment to take a blood sample from the patient to check her blood gas. While she works with the patient I can see she speaks to her quite often even she cannot understand what ID8 is saying. I can see her face and her eyes always smile when she works and speaks with her patient. She also asks me about what nurses in Thailand do about ABG checks. And I told her that nurses will do this activity but we can take the blood from the patient's foot in very young patients but for the older children doctors will do it because it needs to be taken from the patient's artery. ID8 told me that down here the doctor inserts a cannula inside the artery, so we can check it by ourselves but the nurse must be more careful about this activity. ID8 wears gloves and an apron before using the alcohol wipe to clean the connector before testing the central line and getting a sample from the patient, then she brings it to the BG machine and takes off her gloves before the results print out. She also washes her hands after taking off her gloves, and asks me to bring the results to her. Then she records it into the patient's chart.

Then a physiotherapist comes and chats with her about the patient's secretion while she is reading the patient's file. Then she washes her hands with water and liquid soap for a while – less than 10 seconds – and uses an apron and gloves before suctioning the patient without using a mask. Suction tubes and sterile gloves are provided for single-use for this activity, so I can see she uses 6 sterile gloves and 6 suction tubes for this patient. ID8 also wears gloves and an apron to help a physiotherapist to ventilate the oxygen for the patient as well. After they finish, they wash their hands with

water after taking off their gloves and apron and drying it with disposal paper before recording the outcome onto the patient's file. Then ID8 records TPR and fluids in the patient's chart which needs to record every one hour as a routine in ICU.

Her patient gets a high temperature, so she notifies the doctor, and he suggests to her to get some paracetamol for the patient via rectal and get a blood sample to check hemo-culture and get some urine for urine culture as well.

Thus ID8 applies alcohol gel before she prepares the paracetamol and inserts it into the patient's rectum without forgetting to wear gloves before this activity. Another colleague comes to check the dose with her before she takes it to the patient, and then she washes her hands with water and liquid soap before putting on sterile gloves and she takes a blood sample from the central line to check blood culture, and gets a urine sample to check the urine culture. She told me that it will take 2-3 days to get the result. After she finishes this activity she washes her hands with water after takes off her gloves and puts them in the infectious waste bin.

Then she goes to the injection trolley and prepares her patient's medicine while wearing gloves and an apron as well. Another colleague comes to check the dose with her. A sterile sheet is provided during this activity and she also applies the sterile wipe to clean the administration connectors before dripping the medicine into the patient. She checks the central line and exit area are done beforehand. Then she washes her hands after taking off her gloves.

Her patient seems to be wet from sweat, so she checks the patient's temperature again and turns off the controlling temperature blanket after checking that the patient's temperature goes down, without using gloves. The parent's parent and grandparents come around with a little young child, so ID8 informs them about the patient's situation today, and today plan that her patient will be sent to have the ET tube changed in the theatre room and about the high temperature. The parents seem to accept the information and they start washing their hands and kiss their child and talk to her but a little son and grandparents sit on the bedside chair without practicing hand hygiene. Then father, grandparents, and another son come back. He doesn't forget to wash his hands with water and liquid soap before he goes out of the unit.

For visitors, parents and visitors can access this unit 24 hours a day and they can stay overnight at the ward as well. Parents will be trained to wash their hands before having contact with their child. I can see that they are quite concerned about hand washing except for some siblings or relatives. They allow children less than 12 years to come into the unit as well. Nothing is changed before entering, such as shoes or uniform.

Then ID8 prepares sheets and a bed bath set in order to bath a patient and changes the sheet with help from the patient's mother. I notice that the patient's mum always keeps her eyes on any activity that IB8 do for her child, and ID8 has to tell her before she does everything as well. She asks me to help her while she is changing a sheet because the patient's mum is holding the patient on the chair during this time. I wash my hands with water and wear an apron and gloves before helping her. After we finish we wash our hands with water after taking off our gloves and aprons.

3 PM ID8 goes for a lunch break. She washes her hands before leaving the unit, so I go with her to have lunch in the staff room.

After that she decontaminates her hands and puts on gloves before she starts preparing injected medicine for her patient by getting a double-checked dose of medicine from her colleague. After preparing it she set the infusion pump and does not forget to check the exit site and how the line works by flushing normal saline before connecting the administration set. Then she prepares TPN for her patient and told me that the TPN set will be changed every 24 hours. Then she washes her hands with water and liquid soap after she takes off gloves. I can see she has her own lotion to prevent her hands getting dry as well.

There are 2 doctors, one consultant and two senior doctors, who come around the patient. I haven't seen the doctors clean their hands before visiting the patient but they use gloves and aprons. No one reminds them to use gloves or aprons while they are visiting the patient. ID8 asks them about consent forms because her patient will be sent to the theatre room to change the ET tube to another size, and one doctor tells her to ask the surgeon from the theatre to inform the parents and get permission from them before moving her patient to the theatre room. Then ID8 calls the theatre room for this duty and the theatre room told her to take the patient to the waiting room in theatre room then the doctor will inform the parents and get the consent form from that room.

ID8, the patient's mother comes with the patient to the theatre room and waits in the waiting room, two anaesthetists come around and chat with the patient's mother, and then the surgeon comes and informs the patient's mother and gets her permission after that. While we are waiting for the patient to be moved into the theatre room, the patient has got some secretion inside her airway, so ID8 cleans her hands with alcohol gel and suctioned her by using sterile gloves and suction tube. Then she cleans her hands with alcohol gel after taking off her gloves.

Then the patient is moved into the theatre room, and we move back to the intensive care unit. We have a dinner break after that, and I book an appointment with ID8 to interview her later on.

9.2 Observation Journal ID8TH

7.30 AM. My participant (ID8T) is doing handover with her 5 staff nurses and 2 healthcare assistants at the bedside with the nurse who works on the night shift. There are 4-5 nurses working on the day shift today, excluding the head ward. This unit has been separated into 2 blocks (bays) in front of the nurse station, and each bay can admit 4 patients. Thus, there are 8 beds capacity and one cubicle room, which is a negative pressure room. One nurse has to look after 1-2 patients due to the admission in each shift. All nurses in the day shift move to all patients' beds to get information from the night shift. It means my participant was not informed about only her assigned patient, but she also had to be informed of other patients' problems. It takes time around 10 minutes in each case due to massive information.

This unit is quite tidy with good ventilation, and there are sinks located separately in each bay. However, there is individual trolley to put on the patient's files for all patients and also alcohol gel put on every patient's trolley. At bedside there are individual monitors such as TPR monitoring and pump. They will be cleaned up after the patient has been discharged from this unit by a healthcare assistant.

Nurses or healthcare staff who want to access this area should change from their outside shoes to slippers before accessing the unit. Nurses who work in the unit also have to change from her outside clothes into the intensive care uniform during working and if they want to go outside such as going to lunch, they should change back to their own clothes as well. For doctors, guests or visitors they just need to change their shoes, wear a gown and wash their hands before access. Parents are not allowed to stay overnight with the patient but they can visit around from 8 AM to 8 PM.

Today my participant was assigned to look after 2 patients, she started monitoring TPR and O2 Saturation after handover finished, and she checked the rest of IV fluid from the night shift without hand washing, gloves or plastic apron before doing this activity, but she applied alcohol gel before going onto the next patient.

One doctor visited his patient without washing his hands before contact, and he even moved on to another patient without applying alcohol gel. He also did not wash his hands before moving out of the unit.

Then ID8 started doing suction for her first patient by getting help from her colleague to hold the Ambu-bag for the patient. I did not see my participant wash her hands before doing this activity. All connectors were cleaned by using cotton with alcohol before suctioning and it also was cleaned before connecting to the circuit. The nurse also did suction in the patient's mouth by using a special mouth wash drip into the patients' mouth and suctioned by using the previous suction tube. The nurse then started doing the patient's bath and changed the patient's clothes and sheets respectively. She did not use gloves or a plastic apron during this activity.

Suction set tube and gloves were discarded into the infectious waste bin after using and ID8, then ID8 and her colleague washed their hands after taking off gloves, and did the same with the next patient.

Then she monitored vital signs in the patient's file and started preparing an injection drug for her patient by using aseptic technique. Drugs were put in the syringe pump and set with the infusion pump which dripped into the patient via the central line. All connectors were cleaned by cotton with alcohol before and after connection. She did not wash her hands with water before but applied alcohol after finishing this activity, and she also did the same with the next patient.

After that she washed her hands with water and liquid soap before going on lunch break.

After break, she went back to her patients and started monitors her patients and records into the patients' file. Then one of her patient had lots of secretion which could be clearly heard, so she did suction for that patient again without washing her hands with help from another staff member until it was clear. The nurse told me that the most frequent job in this unit is suction and monitoring what has happened to her patient because the patients' vital signs are not stable. Most of patients are unconscious and need a respirator. They have also got a lot of secretion, so some cases have to be suctioned every 15 minutes similar to one of the patients today.

Then she set TPN for her patient by changing the new administration set with pump before dripping into the patient via the central line. All connectors were cleaned by cotton with alcohol before she connected the new TPN set with the line but I did not

see her apply alcohol gel to her hands or wash her hands before this activity. I was told that Tegaderm was changed every 7 days.

2 PM. There was a patient who has got Esophageal Artesia and has just been operated from the theatre room, so he was moved to this unit for close observation. ID8 went straight away to that patient and started suction in the patient's mouth because he had got a lot of secretion; neither she nor her colleague washed their hands before suction. Then the nurse changed a new sterile suction tube and started suctioning in the patient's tube and took some sputum in order to check sputum culture later. The patient was moved from the trolley bed to the patient's bed. Lots of monitors were provided and started recording.

ID8 washed her hands with water and liquid soap after taking off the suction gloves. Then she came back to monitor her patients, and then did suction again.

A large group of doctors and internships came around; I had seen that they changed to slippers before access. I did not see anyone wash their hands or apply alcohol gel when they moved around the patients' beds or had contact with a patient. Only one doctor who was the leader of the team washed her hands before leaving the unit.

There was a long gown hung over the beside of one of the patient's beds; I asked the nurse why it was there, and she told me it was because that case was suspected NI and the gown was provided for staff who needed to have contact with that case but I had not seen anyone used it, including the doctor.

9.3 Interview ID8 TH with feedback from participant

Interviewer: First, I would like to thank for coming, today, and I would like to confirm again that your name and your ID will be anonymous. I will go through your experiences first. How long have you worked here?

Interviewee: I have worked here for 4 years but before I worked here I was trained in NICU, PICU and the newborn surgery department for 1 year, then when this ICU was opened, I started working here. It's around 4 years so far.

Interviewer: I heard that you work as an ICWN as well. How long you have worked as an ICWN?

Interviewee: 3 years.

Interviewer: In your view, you think experience affects IC, don't you?

Interviewee: Absolutely. In my view, it can be both. I mean it can promote nursing practice and also IC as well. On the other hand, it can be negative feedback as well. For example, a difference can be clearly seen about nursing practice and approach to infectious patients between new GNs and senior GNs. However, I have seen that while a senior nurse has more concern about IC than a new GN, sometimes they also have more tricks to explain when they didn't comply with any guideline. Do you understand what I mean? (Laugh) But it depends on individual behavior.

Interviewer: I understand. (Laugh) In your experiences as both nurse practitioner and ICWN, what kind of problems about infection control have you found, and it is difficult to control?

Interviewee: I think it depends on situation. For me, I think all nurses can control themselves if they want to control. It's due to their insight again, but I cannot control other nurses. This is the first thing that is very difficult to control, if they are not willing to participate. Second, as you know this is ICU, so in some situations we have to balance between patient and IC guidelines. For example, when a patient has lot of secretion and a need for suction urgently, I can only wash my hands with alcohol based gel and call for assistant to help me in holding the ambu bag. Sometimes, we might forget to use alcohol to paint the connector or joint of a circuit. I know we can follow guidelines completely if we do suction as routine every 15 or 30 minutes, but for an emergency case, sometimes we have to balance between how long the patient can wait and how to comply with the guidelines completely. So, it's hard to do but we have to be more concerned which step we can skip. I mean we have to be concerned about IC as well because if it is shown that there are high infection rates here, it affects the overall image of our ward.

Interviewer: How about the patients? Can you control them?

Interviewee: If you mean a problem of their own, it's also difficult to control because the child patients admitted here start from newborn to all ages. We cannot reject the patients if they need to be admitted. As you see we have 6 beds, and one separated room but a separated room cannot be used right now due to air ventilation. So if there is infectious patient admitted here, we have to set him/her in this area as well but just leave some space between beds. Mostly patients here are at risk of infection owing to being very young child and low immunity and having an operation such as open

heart and pull through intestine or bowel. As you see the rate of NI here is quite high if you compare with normal wards. Anyway, we try to control as much as we can but I cannot guarantee because it depends on many factors including the patients, staff, doctors, visitors, environment and equipment. One I mention is individual behavior, it is the most difficult to control (Laugh).

Interviewer: I saw some cases referred from other wards, so how do you separate, if it found that there is NI shown in those cases?

Interviewee: Mostly cases moved here need more care or a ventilator, so we will send a sample from tracheal suction to the lab first. If it has shown infection after 48 hours definitely, it will be recorded here. Anyway, we have to assure that it is an infection which is not from improper technique between suction. In my experience, if the patient has been admitted here as the first ward, we can control infection better than a patient referred or moved from other wards. For example, if a patient was moved from a ward after big operation, it is difficult to control because of large wound. If there is infection from the wound, it's due to what has happened in the operation room, the patient's resistance, and interventions after the operation and medicine. It's such a lot factors and if we want to know exactly what caused infection in this case, I recommend we should investigate together it between IC, nurses and doctors.

Interviewer: How is the IC protocol? I mean it is ok for practitioner to follow or is it difficult to comply with. How practical is it?

Interviewee: Basically, all protocols followed by nurse practitioners from different wards are based upon the standard IC protocols integrated with our hospital. I mean they were developed in the different areas. For example, the ventilator care protocol was produced by nurse practitioner from PICU, so it is not the problem for us because we are ICU as well but it's not practical for normal wards when there are some cases of needing to use a ventilator.

Interviewer: Really? Why they weren't moved to ICU?

Interviewee: It's up to doctors. If they think the patients need ventilator for a long time as chronic patient, they might been treated at normal ward because ICU have limited bed capacity.

Interviewer: Oh I see.

Interviewee: And if the patient needs a ventilator on a ward, it might cause a bit of a problem to follow the protocol in terms of equipments. For example, according to suction protocol, we have to use 5 cottons for cleaning the joint and connectors, but in a normal ward, there are not allowed to withdraw lots of cottons. In addition, they also haven't got enough towels as in ICU. I don't know what we can do to find the solution for this because this is a hospital policy. If you are on ICU, you can withdraw such a lot of equipment more than normal wards. Do you understand what I mean?

Interviewer: I see. However, before the protocol comes out, it should have been confirmed by ICN, shouldn't it?

Interviewee: Yes, after we send a protocol to IC, they will discuss with all heads of wards before producing.

Interviewer: Uhhh, Do you think nurse who was responsible to set the protocol should have discussed it with them?

Interviewee: Yes, if they can do.

Interviewer: I wonder, when the protocol came out, why ICN didn't support a solution to this problem?

Interviewee: They said they support everything but the problem comes from supplies to the hospital. They said they can support only some wards where it is necessary to prioritise first. If there is enough equipment, then it will go to normal wards.

Interviewer: I see. It's due to the hospital budget as well. How is about alcohol based gel? Is it enough?

Interviewee: Uhhh. It's ok. We haven't got a problem with equipment. It can be provided at every patients' bed separately, and I put some in treatment trolley as well because I saw some doctors didn't use alcohol based gel before dressing a wound or touching patients. After we asked them, they said it was because they didn't see the alcohol based gel. (Laugh) Even it's put over the patients' bed. So we have to put it prominently in treatment trolley. (Laugh)

Interviewer: Seemingly, you haven't a problem with non-compliance with hand washing for staff and doctors.

Interviewee: Yes, that's the big issue for us because this hospital is the biggest children hospital, so there a lot of nurse student and internship and resident come around. For nurses we can remind each other if someone forgot but for doctors, it is quite difficult to deal with, if they are not concerned about this problem. When we remind them they always said, I won't contact the patient, I'll just come around. I even put a poster on the wall and over the bed. So we reported this problem to ICN as well, and then ICN will orient new internships, externs and residents before they start practicing here. The other way, we report staff doctors to remind them as well.

Interviewer: So how is it going? Do you still have this problem?

Interviewee: Yes. So next we will try to promote a new project to promote hand hygiene in this area. I hope it will be better.

Interviewer: I see. Do you have the same problem between nurses?

Interviewee: Yes, sometimes.

Interviewer: Do you know what the major reason is, if a nurse not comply hand washing?

Interviewee: The popular reasons are hurrying and forgetting. (Laugh)

Interviewer: I saw you didn't wash your hands during intervention, so how do you balance which activity you should do or which activity you can skip?

Interviewee: I have to balance as well which intervention is high risk of infection such as dressing and invasive procedures. However some activities such as patient bath

and monitoring vital signs are not high risk, sometimes I accept, I forget to do as well if I extremely rushed to do many activities.

Interviewer: Have you observed other nurses? Do they have the same reasons?

Interviewee: Yes. But right now we are more concerned about this issue because of evidence which was shown that we've got higher infection rate than last year. So we try to remind each other to wash our hands before and after intervention. After we encouraged this issue, we hadn't got enough towels (Laugh), and when we wanted more towel, Supplies cannot support sufficiently, so some prefer to use alcohol based gel instead in some activities. For me I prefer to wash through water and liquid soap because I don't like alcohol based gel, and I think it does not dry completely. It makes me feel my hands are not clean enough. (Laugh) As you have seen, one case has been treated a lot per shift. Especially suction, some cases we have to do it every 10-15 minutes, so we have to use a lot of towels but Supplies said, "I've already provided your ward more than other wards". What can we do next?

Interviewer: Did you report this problem to the ICN nurse?

Interviewee: Not yet, we will try to manage by ourselves first, if it's not working, I will report it to the ICN.

Interviewer: I see. It is an essential tool, so I think it can affect your project about hand washing as well, so I think the ICN will support you. How is about other equipments such as suction tube? Is it enough and how do you administrate?

Interviewee: For ET suction, we will use a new suction tube, after it's used we will wash it with detergent, dry and pack it to re-sterilise. The re-sterilised tube will be used to suction in patients' mouth only.

Interviewer: How about gloves?

Interviewee: For sterile gloves, they can be reused but for suction gloves, it is single used.

Interviewer: Next, how about ventilator and circuit, and how do you manage them?

Interviewee: Endo-tracheal tube is single used but administrator sets are reused. It is made from silicone and can reuse after re-sterilisation.

Interviewer: how is about circuit? How long before it is changed?

Interviewee: according to IC protocol, it should be changed every 3 days but we have problems that we haven't got enough sets and circuits to change. So we tried to review literature and we found that a unit somewhere hadn't changed ET tube and circuit every three days. It depends on the patient's secretion. However, we tried to link with PI study shown that the maximum number of days that germs are not found in the circuit is 7 days. However the PI unit suggested us to extend from 3 days to 5 days [participant suggested change from 7 days]. So now we change circuit and administrator sets every 5 days because we haven't got enough sterilised set, and we have already reported to ICN on this issue as well, and they allow this only on our ward.

Interviewer: I saw, there is a special officer from ventilator unit comes to change circuits in normal wards. So do you call them or is it changed by your own nurses?

Interviewee: Yes, we change it by ourselves.

Interviewer: I saw you have one separate room, so what criteria will you use to put the patient into a separate room?

Interviewee: Airborne patients and infectious diseases such as rubella, measles, chicken pox and so on. But about MRSA, we can put patients into the main area by leaving more space between beds. However, some airborne cases such as active TB, doctors will not move into this ward because we haven't got enough staff. If the patient was admitted into separated room, we have to arrange one nurse to respond and now we haven't got enough staff nurses to do that. In addition, first this ward was not designated to be ICU, so the separated room is not transparent as the other ICU, so if we decide to put the patient inside that room, we have to assign one nurse separately. It used to be for admitting one patient, who had got very low immune resistance, from another ward, if they required, but that ward had to send their staff to take care of the patient.

Interviewer: How do you manage if you have got a patient with MRSA?

Interviewee: We don't put them to separated room but we leave space between patient's bed instead. For MRSA case, we assign one nurse to take care of them, and emphasize hand washing more.

Interviewer: I saw someone hang a gown suit beside the bed but I haven't seen anyone use it. What is it for?

Interviewee: It's for the doctors and nurses who come around the patient but even me I rarely use it because it takes time to take it on and off. I need to do lots of treatment in a short time and I have to move around as well. Moreover, I spend half a day around the patients' beds. It seems there are many things to do up to lunch time. So I have to be concerned in case I am contaminated for cross infection if I have to move to another area. I mean I have to remind myself whenever I have to contact other people. As you see, we also change our outside clothes to inside clothes after we arrive in this area, and change back before we leave this ward every day. When I go to lunch outside the ward I have to change my dress as well. So I have to be more concerned about hand washing.

Interviewer: How about using a mask? Do you have to use it with MRSA cases?

Interviewee: Actually, we have to use a mask but I don't use because I feel discomfort when using it, and I think I can accept the patient's smell. Anyway, if I have runny nose from cold or allergy, I always use a mask to protect a patient.

Interviewer: I rarely see anyone use a cap as well. How do you decide to use it?

Interviewee: For our hair, if someone has a long hair, she has to band it appropriately. So we don't use a cap if we are not being a doctor's assistant to do invasive treatment. If we have to assist the doctor such as central line insertion, we absolutely have to use it because there are sterile set to use including a gown, gloves, mask and cap.

However, we're rarely assistant, mostly resident and doctor will assist each other. We just provide that service at other times.

Interviewer: I see. Next..... If you found something wrong such as NI showing up after the patient has been admitted here, what do you do?

Interviewee: First, I will report the doctor about the laboratory result. Then if the doctor confirms it is NI definitely, I will report to the ICN.

Interviewer: Have you ever discussed with a doctor about the root causes of NI?

Interviewee: Yes, if the infection rate goes up, we discuss with ICN, and ICN will discuss it with the surgeon team, if the infection rate in patients after operation goes up. Mostly infection is found in craniotomy or VP shunts. I don't know what goes wrong because we rarely contact their wound. I mean the patient comes out of operation room with a closed wound and we are not allowed to open or do anything with their wound but NI from their wound found was the result. So we reported to ICN and asked them to discuss with the doctor what to do next. There are two neuro-surgeons here, and one surgeon has more infection than the other one. I don't know what is wrong. However, he usually does operations more than the other one, so the more cases, the more risk of infection. I think. (Laugh) Sometimes

Interviewer: Do they think it was from the theatre room?

Interviewee: I'm not sure because of the closed wound, and some cases have infection from VP shunt after discharge from us, as well.

Interviewer: I see, there are lots of factors then when the patient has been discharged. How are about parents or visitors? Do you have any problem with them?

Interviewee: We will highlight hand washing before they contact their child.

Interviewer: Have you ever observed them or taught them before?

Interviewee: No, There is a poster over the sink; they can do it on their own. If they cannot do it, we will ask nurse aid to help them.

Interviewer: How are you sure that they do the right process? In my experience even nurses I saw failed the fluorescent test, sometimes we can found they can pass. But whether it will be ok or not depends on the duration and method of washing.

Interviewee: Uhhh... You're right. I will rethink about that.

Interviewer: How about toys? Can parents bring the patient's toy from home? I mean if they have favourite toys.

Interviewee: Yes if the patient is in good condition and can play, we will allow if they request in term of holistic care and children-centred care. However, we have got a lot of toys here, so if the patients are in good condition, we will offer them. As you see, we offer television for a patient who is good condition as well.

Interviewer: How do you manage the toys? I mean both the patient's toy from home and ward's toy.

Interviewee: Regarding toys from home, I didn't ask parents to clean or laundry a toy before bring it here but for our toys we clean toys with alcohol or wash it with washing machine after using with one patient. To be honest, we've just concerned about toys after we found that why infection rate is still high, so we think it might result from the toys because first time we didn't clean enough, so it might make cross infection between patients. That why we start concerning about toys subsequently. However we are not strict about the favorite toys from home as I told you that we didn't ask them to clean it before giving to the patients in ICU. Moreover, I have rarely seen many toys from home because after I asked how parents assure that the toys are cleaned enough, then the parents preferred not to bring it for their child. (Laugh)

Interviewer: Uhhh.... How do you manage about bed hygiene and environment?

Interviewee: We damp only around patient's bed with detergent and water because our patients are quite serious and have lots of treatments. We will damp the patient's bed after they move out from our ward. However, we always change the cover sheet every night shift, and do the bed-bath patients every day and night shift. If I found a dirty cover sheet, I can change it, so it depends on situation as well.

Interviewer: How do you administer IV set or Parenteral set?

Interviewee: We change IV set every three days but for TPN, we change every day.

Interviewer: I saw you put some drug in the same line as TPN lumen. How do you manage this?

Interviewee: Some drugs, if they don't react to TPN and cause sediment, we can put in the same line with TPN but some drugs cause sediment, so we will use another line. You can see, one patient has got double or triple lumen.

Interviewer: I see. Have you ever seen any infection from IV insertion?

Interviewee: Previously, we found high rate of central line infection, then we had a rethink about our method during insertion and caring. Actually doctors will respond to do that. Then we produced a special set to do central line procedure directly after we interview doctors about the problems of difficulties of central line insertion. I reviewed literature from internet and found that 2% cohexidine is more effective than betadine solution to prevent infection from skin, and then we change to use 2%of cohexidine instead. In addition, we use tegaderm close the insertion area instead of gauze, so we don't need to dress the wound the previous time but we will change tegaderm every three days.

Interviewer: How is it working after you changed it?

Interviewee: It has been found that there is rarely any case of central line infection.

Interviewer: Good job. In your view, do you think is it different, caring for children and adults.

Interviewee: It is very different. For example, the children especially very young children are very hard to control when they have to have inserted a central line, because they always move a lot. If there is an insertion near inguinal, it might be at risk of leaking, clotting and infection from urine and stool. So, inguinal line is the last choice.

Interviewer: How is about using antimicrobials?

Interviewee: After operation, basically a patient will be treated first with an antimicrobial such as cefazolin. If there is something wrong such as signs of infection. This will be confirmed by testing hemo-culture or sputum culture. If the lab shows infection, the surgeon will change to a high quality antimicrobial.

Interviewer: If doctors did something wrong or forgot to do something such as hand washing, can you remind them?

Interviewee: Previously, I didn't dare do it enough but right now I can do it particularly about drug use. But it's not happening quite often. Anyway, I have to check their emotion first. (Laugh) I think this task seems to use technique and tactics as well. (Laugh) The more you gain experiences, the more you can do. (Laugh) I even remind the doctor when he left patient with double lumen for a long time. This is because the patient haven't been treated anything via the central line anymore but he said "If there is no sign of infection, just leave it at the moment". Can you image his moment? It took nearly one month. (Laugh) However, I think it depends on personal ego as well. I have to say ego because it's related to personal behaviour. I hope it will be better soon because right now we can deal with doctors better than previously.

Interviewer: (Laugh) I can see. Have you had a problem with UTI?

Interviewee: It's rarely found even the catheter has been used in some cases nearly one month.

Interviewer: How frequently will it be changed?

Interviewee: First, it will be changed every one month in patients with a chronic problem but now if there are sign of infection such as high temperature, the surgeon will order to change it around every 7 days. It depends on the case and situation as well.

Interviewer: It seems nurses have to work very hard here. Do you know the ratio between nurse and patient here exactly?

Interviewee: As I know, we have got 1 nurse to 2 patients but my ward's head said now we have got 2 nurses to 3 patients. It's quite load for us but there are not enough positions. It's based on government policy as well. I heard that in some hospitals such as Siriraj and Rama hospital there is one nurse to one patient in ICU.

Interviewer: May be it's true of a university hospital but this hospital belongs to the ministry of Public health.

Interviewee: Yes, one doctor who specialise in CVT, he always studies new treatments and sometime it puts me in trouble as well. For example, he didn't allow us to move his patient after an operation and wanted him to stay in a flat position until he changes the order, while we were concerned about bed sore and pneumonia.

Interviewer: What had happen then?

Interviewee: Of course, a patient got bedsore and pneumonia but doctor said, this way is better for his life than the old way, so he was concerned about his life more than these complications, these complications we can find out the solution for later.

Interviewer: Uhhh.... Maybe he's right?

Interviewee: Anyway, I ask him to move his case a bit and find out something to provide support in order to prevent bedsore. You know, we have to do my job as well.

Interviewer: And he allowed it, didn't he?

Interviewee: Yes but only a bit. He said you can do but avoid disturbing my patients too much.

Interviewer: Uhhh .. I see because they are part of his studying.

Interviewee: Yes, I think so. I asked my friend who works over there, she said there are not many difficult cases especially in very young children. I asked her that "Do you have a case of arterial switch?" She said, she's never found one. She's seen only the case of closing heart in older children. I'm wondered as well because in this hospital we do everything even in very young child.

Interviewer: Maybe because the doctors here are more challenging. (Laugh) As you said that they always try to learn new treatment and operation by searching from internet. I think it's quite good to develop new treatments, and nurses also learn with him as well. Uhhh.... Have you ever been trained on any special course?

Interviewee: I have just been trained in PICU but there are two other nurses that have been trained in CVT (Cardiovascular and Thoracic Surgery), another one has been trained in respiratory disease and one nurse has been trained in ICU.

Interviewer: What are criteria such as experiences and duties for nurses here to be selected to train or study?

Interviewee: It depends on personal readiness more than experiences and duties, so they are free to submit and test but if there are two or three nurses they can all pass the exam in the same period. They will be selected by an executive board because they cannot leave to study at the same time as it would lead to a shortage of staff. The first priority that executive boards consider is age. Second criterion is the outcome of the course.

Interviewer: I see. Do you have other training or conferences in this hospital?

Interviewee: Yes, there are a lot of conferences here but most of them are 1-2 days meetings.

Interviewer: How is about IC training?

Interviewee: It has been organized twice a year.

Interviewer: Who will participate with IC meeting?

Interviewee: The majority are nurses; others are nurse's aids and interested staff.

Interviewer: How many ICN in this hospital?

Interviewee: Two.

Interviewer: I saw one case of MRSA here. Do they come to your ward when you report NI case?

Interviewee: Sometimes. Previously we hadn't got the other ICN, she always comes after we report but now we have got a new team, she is very busy because she has to train outside the hospital as well. Moreover, they will get the report case from laboratory unit directly if any patient in this hospital has any infection (HCAI).

Interviewer: I see. If there is anything update about IC, how do they do?

Interviewee: ICN will inform ICWN, and then we will then post or inform our staff.

Interviewer: Are there other healthcare provider that get involved in IC board?

Interviewee: There is one doctor appointed to be Head of IC but I don't know there are any others involved.

Interviewer: What does he do? I mean head of IC.

Interviewee: He has just being the consultant if there is something quite serious happening about IC such as breakout of avian flu. If there is NI in wards, ICN always deal with it without him.

Interviewer: Have you ever met the patient with avian flu?

Interviewee: Yes, but they were not admitted here. They were put into special place for only avian flu but nurses were rotated to take care of them with super prevention. I mean we have to dress as the same as an astronaut. (Laugh)

Interviewer: I can imagine. (Laugh)

Interviewee: It had just spread the first time, so there was no protocol, no guidelines and no anti drug. So we had to do everything as safe as we can. After contact with the patient, nurses had been checked with blood tests as well.

Interviewer: What has happen after that?

Interviewee: There was an antibody shown in a relative who took care of a child before admission but there were no problem in our staff. However there is no problem with a relative as well after he was observed.

Interviewer: It is quite exciting, isn't it?

Interviewee: Yes.

Interviewer: Uhm.... So far I'd to ask about recommendation for infection control. Do you have any things concerning or recommendation?

Interviewee: I think ICWN should be supported from the hospital to have more training in depth. Because I think it will be very useful to investigate and prevent cross infection on our own. In other wards all nurses will be rotated to be ICWN in order to be all aware of infection control but in this ward our head manager doesn't want to rotate because she wants the ICWN to gain more experience and will be a specialist in the future if we are learning by doing.

Interviewer: In your view, have you got any nursing strengths about IC which is better than other wards?

Interviewee: If I compare with another ward. Uhhmm... Maybe suction care. This is confirmed by other staff, we always do mouth care after suction every time. The other thing is central line care, as I told you before that we modify new set and also design an assessment record providing every case that has had a central line inserted, and the nurse has to record every two hour, so if there is anything wrong such as leaking or clotting, we will find out shortly. Moreover, in term of ICU, we are supported by hospital more than other wards. For example, all patients will have their own set and equipment separately. I didn't think we are better than other wards but I think we are lucky because we have got support from the hospital.

Interviewer: Uhm..... Thank you in deed for your information today. I think it is very useful for my research, if I have further need for information I will contact you later.

Interviewee: You're welcome.

9.4 Transcription ID8-E with feedback

Interviewer in black and Interviewee in blue

Thank you for coming, I appreciate it. Shall we start with your experience?

Yeah, but I mean you have to guide me because I don't really know what you want to know.

Okay, could you please tell me about your experiences when you were a student nurse and after you finished your first degree.

As a student nurse, yes it was great. I didn't really have any bad experiences, I got to work in lots of different areas, they were all supportive, I had good mentors, and university was all right so yeah. Not really a lot to say to be honest with you it was all...

And then after you finished...

After I finished –well I qualified in February...

Which year?

2006, and I was interviewed here because I trained here as well, so I had an interview here, in Christmas and then I found out I had the job just after Christmas and then I applied for a rotation. So I asked if I could work on children's Intensive Care and part of the rotation would be about 18 months. So it was 3 months on ward 12, 6 months on PICU at the Glenfield hospital and 9 months here, and then in that period of like the different placements I think we had a month **supernumerary**, and then we went on to being the numbers in every single area.

So you work only in children's areas, don't you? Or you haven't got any experiences? I mean in adult nursing or others.

Only in children, no adult experience, in the first year of training at university we had--- we trained with all the cohort so like mental health, adults, midwifery and children. And we had.... like general AP and all of the basic stuff and then after your first year of training you then went into your specialty- so obviously mine was children. And I did 2 years of...

So you have to choose the major in the 2nd year, right?

You know what you're doing when you first go into it, yeah you choose it straight off, but you're still training with the other lot, for the first year.

So in your view you like to work with children more than adults, don't you?

Children definitely yes, I always knew that I want to work with children.

And in your experience which age do you think is difficult to deal with?

In children?

I mean in adults and children. Which one is quite difficult to look after?

I think it's both, I can't really say because I've not really done adult nursing but... but I mean I think for me personally I feel that if you're going to be a children's nurse you have to purely do a children's nursing degree, because in children's nursing we learn about all the anatomy and in infancy as well as adult because obviously our age goes from 0 to 18 years, so we learn all of the AP and all of the illnesses as well as the whole wide range of ages. Whereas adults nursing are purely based on adults, so they don't have any knowledge or experience in children's nursing.... So I feel that although we can probably transfer our knowledge to adults they couldn't transfer their knowledge into children's nursing, but I don't know if that's true so...

Regarding infection control, which one do you think it's more difficult to control, if we compare adults to children?

I mean I suppose children if we are talking about infection control, then it's children. Probably children are going to be more difficult because they they've always got visitors with them and things like that. They've always got families and parents, so you're not just literally caring for one person, you're caring for a whole group of people. You've got the issues of siblings and all that as well, so if you got a case where you've got to have the parents with them all the time then you've got a family coming to visit them plus, if they got siblings that are coming to visit them, that are running everywhere and playing and you know going everywhere on the ward area, so in that kind of aspect that's a bit more challenging.

So, do you think the parents and siblings have to get involved in the nursing care?

Yes, definitely.

So, you have to deal with not only the patient, right?

Yes you don't really have to care for the patient's family, but because you have the parents staying with the child the whole of the time, definitely parents don't look after themselves, because they are so worried about the kids. So you do have to care for the whole family. And also if you do have a child and they've got a brother or sister coming to see them, that can be quite upsetting for them, so you also have to care for the siblings in order to make it a positive experience for them to visit their brother or sister. Yeah you've got a lot more people to think about, definitely.

Okay, let's go to the training next, Do you have any training after work?

What, in infection control?

Yes and other training.

Yes, every year we do our mandatory training. Every nurse has to do mandatory training once a year. And as part of that you have updates on infection control.

Do you have certificates for that?

I can't remember if we get certificates for that.

And, all doctors have to do that, haven't they?

I'm not sure about the doctors actually. I don't know if they have to do mandatory updates.

You have to update in different groups right? You don't do it in the same group with doctors?

No just nurses.

And I heard that you are a mentor as well, so have you been trained to be a mentor?

Yes I was trained to teach newly qualified and students.

Do you earn any credit or paid for that activity?

I don't get extra pay for it. Obviously the hospital pays for me to do the training, so I don't have to pay to do it myself.....but, yes I think its 15 credits the module. When I was qualified, I was qualified with the diploma certificate, so I have not actually got a degree as of yet, so my continuing training will be to do different modules, and then build up my credits to a degree level.

How long for, that course?

Well, I have done my mentorship so far and then in September I start my intensive care course. That's a year course with a day release once a week and that will give me a degree after I finish that.

If you get a degree, it will give you more wages or just the same?

I don't get more pay, but we automatically pass through gateways which we then get an increase in pay for. So the steps that the hospital expect you to go through to improve our practice ourselves, doing these courses for instance, and then once a year we will meet with our leader, so whichever sister you have been allocated to, and we will have our appraisal and they make sure we are passing through all the gateways that are expected of us, and we automatically get the pay that is associated with that.

So that will put you through to a higher band, right?

Well at the moment I am a band 5 nurse. We qualify as a band 5 nurse and then if I want to go to a band 6 I can't automatically just go into a band 6 but obviously with all the training that I'm doing after qualifying will put me in a good place to the post that will become available and I'd go to the interviews and I will then say well I've done this training and I've done this course, and I'm competent in this and this and this and that will obviously allow me to get the band 6.

So you can be the in-charge nurse, can't you?

Band 6 is dark blue could be in-charge; basically it's a deputy sister.

This is different because we only have head wards and sub head and then its only staff nurse but we have different salary in terms of experience.

You do, I mean if you came in as a newly qualified band 5 and then you went somewhere else and you've been working for 2 years as a band 5 and went to apply for a job somewhere else you automatically go in as a higher **threshold** because you've already got that experience. So there's a range of a salary I think it's something like... 19 to 24 grand or something like that and then you come in as the lowest if you're newly qualified and depending on how long you've been working for... and how much training you've had and then obviously you'd come in at that **threshold** if that makes sense.

And how do you update your knowledge? I mean do you have to subscribe any articles or...

Yeah, I'm a member of a – well obviously I'm a member of the RCN and I also get the children's journal as well that... We have that delivered once a month.

That's good. If they have a new disease like... swine flu, so how do you get updated information about this disease?

Usually if there's something new, or if there is **epidemic** like swine flu the people in infection control and clinical governance people like that will automatically bring in policies in line with how we are going to deal with it, so they will automatically send us emails of links to sites that they have made with new policies, so there are things for you already but of course like research, but we automatically have our policies set up for us if there is something new arrived.

Does it include... like nursing care or protocol as well?

Wear the masks and the gloves yes we have all that, and that's one of the new thing that's came in from clinical governance of infection control, a specially appointed team that will serve the whole of the children hospital. Then it will be up to them to make sure that the information is passed down to staff or ward level if you like. So that's how we get all of that information with regard to best practicing in infection control. That's what we will be taught each year in updates days, in our mandatory training if there is something new coming our new ways of practice which has been deemed more efficient then that will be passed down to us in our update days and talked to us there.

Quite interesting, and do you have any nurses as members of the infection control team?

Yes we have two appointed nurses in Intensive Care, who are infection control nurses, and basically I think they tend a meeting with the infection control team every couple of month or something like that and if something new comes up then it's up to them to relate it back to us, their own team.

So you have to wait for information from infection control nurse and then?

To our nurses and who then obviously pass it on to their own colleagues.

And about the infection control protocol. Which one do you think is the most difficult to comply to? I mean about the hand hygiene, sharp equipment management and so on. Which one do you think is the most difficult to comply with?

I think that we are pretty good at hand hygiene. I don't think that it's an issue any more. You know, before, you might have one sink on a ward or something like that. But now we have got quite a lot of stations where you could do hand hygiene or things like that. We always have units with aprons and gloves and things like that. So there is always something close by so you can always guarantee, because obviously you don't go to a patient without an apron and things like that. As to which I know it's difficult for us at the moment. I know in Intensive Care it's because of the whole swine flu thing. We are having to wear a long gown, so a gown with sleeves down to our wrist. And you know you've got to put your gloves on, and your masks on. And the other thing is, if you have a child in Intensive Care in the cubicle, and you're outside, and if an emergency happens, then you can't stand there at the door, putting gowns and gloves and masks and everything on, because if that child is not breathing you have to be there right away that's quite difficult to do that I think. But otherwise I think that it's pretty well organized, I don't know - I think we are alright at it.

We have the same problem in my country; the biggest problem is cleaning your hands before you contact the patients and in your experience what is the biggest problem?

I don't think so, although I have to say - hands up - that I did go into a cubicle the other day, put my gowns on, and my gloves on. I was going into a cubicle into a child with suspected swine flu, and I walked in and I was standing there talking to the parents. And all of a sudden realised I'd forgotten to put my masks on. And then I was like "oh no I haven't got my mask o'n, and then I had to go out and go get my masks and gown all back up again. But it's just forgetfulness. If you're busy and things like that so... I think we are quite good at doing it. I don't think there is anything you can put in place to improve it. And I think the only thing is, as well, it's quite new to everyone, so everyone has got to learn it and get use to it and do it as part of their routine. You know we rarely wear masks, and the only other illness that we would wear masks for is TB, and we don't get that very often in England so...

And yes I saw that many nurses don't like to wear masks.

We hate them.

Even for suction?

With a normal patient?

Yes.

We don't wear masks with a normal patient, no, with a patient who hasn't got an infection. But what we would class as infectious would be meningitis or TB, CMV, C-Dif. All those kind of illnesses, it would be children in a cubicle. But if you've only got a child with a chest infection that's on a unit, and they are not in a cubicle, we don't wear masks to do suctioning or anything like that. We wear gloves and aprons that's it.

Because you don't think it can affect cross infection from patients to patient, is that why you don't use he masks?

Well, I mean if you got a ventilated patient as well then they pretty much got a close circuit as well haven't they. They are on the ventilated so they are on the close circuit. It's even when we have a child, let's say they have a RSV virus and they are positive, we wouldn't necessarily put them in the cubicle in Intensive Care because they are on a ventilation and all their ventilation is being on a close filtered circuit so... But I mean you know if they accidentally splash on you then... But you know as long as you got good hand hygiene and you are wearing aprons, then you're not exposing that child to any bugs you've picked up from any surfaces and that. And if the child is in the unit, it's not going to make any difference as to whether if the child next to them is breathing if that makes sense. If the other child has got an infection next door to them, they're breathing. So it's not going to make any difference if we wear a mask, 'cause if they are breathing out into the air, and it's transferred in particles, then they are going to catch it that way any way. But most of the illnesses and chest infections aren't actually transferred in particles, anyway. You'll find that they are transferred on surfaces and things like that. So hand hygiene should be **acquitted** [should be acquired] I feel. But it's not general practice of masks with all patients.

When you get sick, or a runny nose, how do you protect yourself?

Well I mean if you are really quite poorly then I tend to not come into work, because I hate looking after a child, even if I feel I could come to work but I'm sneezing and coughing everywhere then I tend to. For the worst of it, I don't come into work because I hate it, when your with a patient, and you've got parents there, and you're coughing and sneezing, and they are looking at me as if to say "what the hell are you going to give my child?". But, you know, if everybody was off sick with a runny nose, then you won't be able to run the hospital. Of course we work around ill people, so we are going to catch illnesses. You can't be off sick for every sniffle. And again, you know, if you're blowing your nose and coughing into your hand, you just need good hand hygiene, and making sure you're washing your hands and using your alcohol based **gel** all the time, and hopefully that would be enough. And again, like I say, if you have a child with a ventilated circuit, then they shouldn't be catching things from you anyway. If you are using good hand hygiene, and if you have got a child in immunizing compromise - so your child is an oncology patient or something like that -and an infectious patient and they are in an cubicle, and you have got somebody who is in, and they are a little bit under the weather (cough and cold), then you tend not to put them in with the child. From experience, that's just what I've picked up. But its not policy or anything it's just common sense I think.

I saw down here that parents are quite concerned about nursing care, so do you have any problem with them in your experience?

I've never had any problems with them; they wouldn't be scared if they see a doctor or a nurse coming up to their child who hadn't wash their hands, wasn't wearing gloves or wasn't wearing aprons. I tend to think that parents aren't scared to say "excuse me, you haven't wash your hands, can you wash your hands before you touch my child". Which is quite a good thing I suppose.

Yes because they always keep eyes on everything you do as well.

Yeah, they do, they are quite involved and I think that's the way our culture is. It's quite 'freedom of speech', and they are very knowledgeable. They've got the internet now, so they are very up to date, everything is quite immediate. There's a lot of thing in the media nowadays, as with the MRSA and that kind of bug. The public are now more

aware of what should be happening due to the internet and media and those kind of people. So I think that's why they like to be involved and see things being done properly.

So then the nurses have to be more aware when they're looking after the child, right? That is different from my country, because in my country most parents still respect the doctor as a god and nurse is sub-god, and so everything we do –but this happens in parents who haven't got higher education.

I think that's the quite interesting thing to say, as well, because here people are very well educated. Most people are very well educated, they've gone through school especially to GCSE at 16 and A levels. So people are very well educated and they do know a lot more about things so... That makes them more aware of things as well, I think they do think of us in a higher...

Yes, because they can get into the media from TV, from the news, from the Internet.

And magazine and papers?

Sometimes they read a lot of things about the children but it depends on their educational background.

I don't think that's necessarily a bad thing though, because if something like that is making you as a nurse or a doctor more aware of your practice, then so what? It means you're giving better care so that's a good thing. As much as sometimes you might be doing something right, and they think you're doing it wrong then of course that's annoying, but most of the time they will pick up on the things you should be doing. So they are within their rights because it's their child you're looking after at the end of the day so.

Have you ever had problems with parents who think they know more about things than you do?

Not as regards to infection control and things like that -never had any problems with, any complaints or... but sometimes with certain cares, child... says..... Let's say for example if the child needed suctioning and the parents think it's horrible 'cause it looks horrible. It looks like the child is in pain, it looks like the child is uncomfortable, and they are like... "No I don't want you to do it", then of course you have to say "well I've got to do it", so that's just a one of example. Or for instance I had a family recently where the child had to be sedated, muscle relaxed, so they can be ventilated. And when we told the mum we are giving them all these drugs, obviously the child was not breathing. We were giving her medicine to stop her from breathing, so we could do it for her, she could not understand why we were stopping her child from breathing. And so some issues arose from that, sometime I think they feel that... I don't know, they question you a lot, and I mean sometime we are right sometimes we are wrong, and I think it's just the case of you explaining everything to them properly.

If you cannot deal with- I don't mean you, I mean a nurse, cannot deal with parents, who is going to be responsible to take care of that?

If we are having issues with the parents and they maybe we are being, let's say, verbally abused, or you know it's not very pleasant, or they're stopping us from doing our job. Myself and I would try to deal with it first, but if I can't deal with it then I'd asked the sister in charge or the nurse in charge of the shift to come over and to probably

Speak with the parents. If that still wasn't enough then doctors could obviously try and speak with the parents as well because a lot of the times the doctor are god compare to us. You know we are just the doctor's slave, we don't know anything, but the doctors know everything. So sometimes it only takes the doctor I think.

So you have the same as us?

Sometimes yes, like they still, I think, a lot of families hold the doctor in a higher position to nurses. Of course sometimes it takes the doctor to repeat what you've already said, but it's come from the doctor so that fine if that's not the case. Then we got people like the modern matron and people like that, who deal with complaints. But usually it can be sorted without going to those lengths.

I think that the more the parents feel impressed by the nurses the less they will complain, do you agree?

Yes, if they like you more. Of course, because if you have a nurse, who looks after your child, and you don't like them. They may be doing a fantastic job as a nurse, but you just don't click they, yeah. They are more likely to pick at things you do.

Do you have any problems with the doctor or your colleagues? Can you remind them when they make contact with your patients without hand washing?

Can we say something to them?

Yes.

Yeah, I mean, of course the doctors do come into the unit and come in to see the patients and don't wash their hands or put an apron on to examine the patient. But we have got a culture, I feel are bound as a unit that we can say, 'Please can you go and wash your hands before you touch my patient'. It's very much where we would say, "it's my patient". So I'm the patient's nurse, so it's my patient. If you want to touch my patient, then you have to wash your hands. You get very demanding.

Yes, you're right because if something is wrong, you will be the first one who will be complained about, by parents, right?

Yes we do, we get it all at us so... it is very much a blame cultural on the nursing [should be nurses] rather than in the doctor I think.

As you have seen, which group of health care staff always wash their hands before they contact the patients?

I think it tend to be more of a senior doctors, not necessarily our consultants in Intensive Care. But you tend to find that it'll be like surgeons or surgical teams or people like that, people who don't always work on our units. Probably work in other areas, but they just have one patient in our unit that they just come to see daily. It tends to be those, I'd say.

Are you confident enough to remind them?

I think most people do.

If you seen them order the wrong dose of medicine, what do you do?

At the end of the day as well we're responsible for the medicine we're giving. We can't just say, "well the doctor prescribed it like that, that's why I've given it". We're responsible for checking the dose of the drug, and the time it's being given and everything else. Even though the doctor has written it and signed it, they're probably going to get into less trouble than us because we're the one who gives it. So, yes if something was wrong, I will ask the doctor and say something, and if we disagree still then we'll get in touch with the pharmacist. Then they can confirm.

That's a good deal I think, because you can protect yourself as well.

You have to because you get in trouble at the end of the day so...

And... about the infection control guidelines, how do you deal with the waste products? –I mean how to discard the sharps?

Well, we have the sharps bin by the bed space, for every patient, we have a sharp bin. For each patient, you have one.

If it's full, who will be responsible to empty it, then?

Yes, say if you are in a infected cubicle, and that child is now gone and you are now cleaning the cubicle, then the sharps bin will be closed and discarded and you put a new one in there, for each patient.

So, you have like a housekeeper, right?

They don't discard them, the nurses do the sharps bin, but sometime the HA [healthcare assistance]. So, they would be not qualified to a nurse level but they can be up to a band 4, so we are band 5 nurses, and they can help us with a lot of the stuff like that as well.

Next, let's go to the hospital acquired infection, how many MRSA case in your experience that you have ever met? I mean do you find a lot of MRSA case in Intensive Care?

No, we don't actually probably get about one a month, if that. It tends to be long-term patients, who have been in hospital for months or years or come into hospital regularly. They tend to be the patients who have MRSA. It's very rare that we'll have an acute patient who contracts MRSA, or before they've come to us.

How do you manage the MRSA, do you put them in the cubicle or outside?

If it's patient who has come in from another hospital, then they automatically go into a cubicle, until they are clear for MRSA. They may have been cleared at the other hospital and that's fine, but when you admit a new patient you automatically do a MRSA screen and send that to the lab, and then obviously if you get a negative then that's fine. We also in Intensive Care because we deem it as a high risk area because they obviously have operations, have lots of lines. They've got their ET tubes lots of access obviously, and open wounds like that. We deem it as a high risk, so they automatically have MRSA washes once a day. We automatically give them a cream called batcher ban [should be called Bactroban], which is a nasal cream so that we

give them. I think it's three times a day, they don't automatically have that on the ward, they'd only have that on the ward if they have central linings or if they are immunity compromised.

Do you mean they will have routine laps or routine check?

Yes, routine swab when they're admitted to the hospital.

Just the patient who was admitted in Intensive Care or include the patient in the normal ward as well?

I presume it's general practice everywhere, I think everywhere.

Because I asked the nurse outside and they said they don't have the routine labs to check the MRSA outside, so just in Adult Intensive Care.

In other wards they don't do that?

Yeah.

Oh we do.

Yes, because this is a high dependency ward.

Well, yes I suppose it's because they are so poorly and compromised that it would make sense, me personally I think that everybody should be screened for it when they come in to the hospital, but I don't know so.

In my experience I found that sometimes we cannot indicate where the patient gets MRSA. Do you have the same problem?

No, we wouldn't know, I mean you can get MRSA in the community can't you? You can be carrying MRSA and be negative but then get poorly and be immune compromised. And then it will take hold and really becomes a problem for you so... you could be walking in the community with it, quite healthy and then all of a sudden get an acute illness and get very poorly. And then the MRSA will then show itself, and become positive for, say, children on the ward come in and have **sterilised** in and things like that. You know they are having a lot of procedures done to them, so I don't get that really, because you don't have to be in hospital to get MRSA you can also get it... Its also very prevalent in the community as well so... I don't know.

Have you got any other cross infection in your ward, I mean other hospital acquired infections?

One of the other things would be C-dif. I think it's called.... we don't see it very often, but we have had cases where the ward had to be shut down like the patient still stays there but they've not been allowed to have any new patients on there or anything like that. Basically an isolation ward because say three people has got the same bugs, and you can never prove if it's cross contamination or it could just be coincidence but yes it could be. I mean if you get a child with diarrhoea they automatically go into a cubicle and they are tested for C-dif.

And, about anti-microbial, do you know what kind of antimicrobial which was used for the basic in infection disease?

What kind of anti-biotic do we use?

Yes.

It's hard to say because we've got such a wide range of medicine for lots of different illnesses so... depends what your illnesses is as to what medicine you get and its...

So do you use the wide range first?

Wide range of anti-biotic like it's huge. I can't even name all of the- it's like there's so many different thing we use but then that tends to depends to the doctor. Because the doctor is the person who decides what medicine the children are going to have, we just give the medicine that the doctor decides that they're going to have. We just give the medicine that the doctor decided that the child should be on. But we have somebody called the microbiologist. so if we have an illness that we are not 100% about, or the doctor is not 100% sure about, then they can speak to the micro-biologist and get advice to them as to what they feel would be the best for anti-biotic for this child to be on. And if they got an illnesses as well, then we can send off samples, whether it's a chest infection, diarrhoea, urination or anything. And they'll grow it and see what bug they find, and then if they find a bug the microbiologist can then tell the doctor what this bug would be - resistance to - or what anti-biotic would be best to fight it.

If doctors decide to use a high quality of anti-biotic, they can decide by immediately, or do they have to consult the consultant, or the pharmacy?

I think the registrar, would be the doctor underneath the consultants, could decide themselves.

Because this seems to be different from my country that when doctors decide to use a high quality of anti-biotic, they should get the permission from the director, so it's different.

Yes, they don't have to do that, if the child is poorly, and you kind of say, for instance, if you suspect meningitis a child is also automatically given a dose of first line anti-biotic. That's what we call them. I couldn't be 100% of what they are exactly but I think it's... I think it's Cefoxin.. and Gentamicin or something like that anyway. But yes they are automatically given these anti-biotic and the doctors would automatically do that by themselves. And then obviously for continuing care the consultant would come and review the child maybe later on. And then they'll discuss the medicine and if the consultant thinks "oh well I don't think we should give that one, I think we need to change it to" whatever, then of course the consultant will do that. But otherwise the group of registrar staff will give whatever they feel is the appropriate anti-biotic.

What about central line care, how do you manage it?

We use a septic technique with a central line, if we are changing on a central line, we have something called a smart site, which we put on the ends of it. Which obviously closes the line of any bacteria and anything like that. If you've got all of those bungs at the end of your line, then you can just use a clean technique. So we would use sterile

towels, wear gloves and use a non-touch techniques. So you're not touching the end of any of the lines, and wiping them with alcohol wipe and things like that. And then obviously if you need to change the bungs, then the wire is going to be open to the atmosphere. Then you have to use aseptic technique, which would be wearing the sterile gloves having dirty hands and clean hands, and all that kind of stuff. So yeah generally just to give medicines, the lines are normally closed with bungs, and you can just use a clean none touch technique.

That's good, and you have to observe the exits sign as well right? I mean if something wrong such as swelling or rashes, then nurse have to notify the doctor, right?

Observed, yes every hour we tick weather the lines are working, and with central lines your checking for fusion and things like that. On our chart the big chart that you see, we tick of every hour if the line looks ok or not, to prove that we're observing it.

Because I think that in Intensive Care it's quite dangerous, so if we don't have a good maintenance, it's quite risky.

We rarely have anything that goes wrong with the patients. Of course sometimes they may have infusion issues or something like that, or their band change going red. You know, you just observe it, and if you observe anything you let the doctors know, and the doctors will decide whether they want to take the line out or not. We are very cautious with them and everybody is taught the management of them, and knows what to look for if something was going wrong, if they had a clog or something like that.

Do you have a routine to change the central line?

I think the central line we're using at the moment has automatically got an antibiotic layer on them. So actually inside the central lines, it's sprayed with antibiotics. So that means we can keep them in for longer, and I think that means that we can keep them in for 6 week So the child can have them on for 6 weeks before it needs to be changed, something like that.

Sometimes adult and children is quite different because in the infection control standard, in adults, the cannulae is changed every 3 days, right?

3 days and we do it once a week, if it's not antibiotic-lined, then it should be changed once a week.

So you have to change once a week?

Usually, fingers cross the patient aren't here for once a week. But I will say that they don't get changed once a week because you have to. Often in intensive they do get changed, in the sense that they stopped working, because we use them so much, because we are giving so many medicines, that they tend to tissue or stop working. They are due for a change anyway, which means they will be taken out and a new one be put in, just 'cause we're giving so many medicines, But I do know that sometimes, if you know that a central line has been in for a certain amount of time, the child is not showing any sign of infection. Then you do their bloods daily to infection mark because they are not showing any sign of infection, then you think that they got a possibility of getting better in the next few days and then you'll be able to remove it. Then you won't take it out, to put in a new central line for three days because you have to weigh up the pro and the cons of putting the child through that. And also if it's a child whose been in

Intensive Care for a long time, they may not have much point of access to central lines due to scarring from previous ones. You don't want to use up all their access, and then in a year's time the child gets poorly again and then it's too difficult to put any line in, because it's been prodded and poked everywhere possible, and all their veins have collapsed. And, you know, things like that. You have to weigh up the pros and the cons of it from that point of view. If we had a child with spiking temperature then infection marks were raising and things like that then we would remove lines and replace them all.

You're right because sometimes it's quite difficult for communication in the children's ward.

So, rather than doing it as routine, we do it to regards to the presentation of the child, so how they are presenting to us. If they are very well and not showing any sign of infection then you wouldn't worry about it so much.

Yes because in children's it's difficult to find other lines, it's difficult more than adults.

Yes and it's quite a traumatic thing for them to go through. You have to give medicines to stop them from sedation. So you've got a risk in itself for giving the child sedation to be able to do a line, can stop them from breathing. So you have to think about it as a wider picture I think. Rather than just 'is that child at risk from getting infections', you have to think in a bigger picture.

Yes that's right – and about the tube, do you have a routine plan to change the tube?

No you don't tend to. Ideally the child wouldn't have the tube down for longer than a week. If a child has got a tube down for longer than a week, you wouldn't routinely change it, because you will risk taking that tube out and you're going to lose their air way. They sometimes do get changed, in the sense that if you got a child that you know is going to have the tube in for long time, then we usually orally inebriate them. Whereas the doctor might opt for nasal intubation because its more comfortable for the child, so they do get change sometimes for that, but not necessarily just for infection control.

But this one is different from the adult as well, because in the adult if they have to use the tube for long term, they have to change after two weeks because the boss told me, instead.

Tracheostomy has to be changed once a week that different to an ET tube if you got Tracheostomy, we change that.

It will be changed in the theatre room on in the unit?

No, if a child has an tracheostomy, if it's a new tracheostomy then the first change would be done by the surgeon. But they tend to do it on our unit, the surgeon will come up to the unit and do it there. Obviously they have to undo the suture because they suture it in, they have to undo that, and then they have to do the first one. But once the first one has been done we just do it, like wherever.

No, I just wondered because the first case that I observed, his tracheostomy was changed in the theatre room.

They did go to theatre yeah... I think it was because the child has a risk of - if there's been a certain grade of intubation, they've got problems of swelling and things like that, then they might want to take them down to theatre. Because it's a better managed environment, if they were to lose the air way for them, then to intubate the child probably, do another surgical air way, or whatever, they need to do to make the child breath properly. Whereas if your on the unit and you're trying to change the tracheostomy and the hole closes up. And then you can't intubate the child orally, then your stuffed and you can't, and then it's not ideal to then do another surgical airway in the middle of the Intensive Care unit. Whereas if they need to do that down in theatre, there are equipment to be able to deal with it. So if you got a high-risk child then they may sometimes go down to theatre but they don't tend to its not normal practise. Sometimes if we've got a child who is going to extubate as well, and they've had history of crupper or air way collapsing they was a high intubation, then it was very difficult to tube and had lots of problems and the **incises [should be incision]** had to come and do it because the doctor couldn't, then we might have to take them down to theatre to take the tube out, just in case they need another one putting in. So it just depends on the child really.

It's quite interesting because nurses can do it themselves. In your idea, what do you think about the nursing care in Intensive Care and the normal ward, which one is more difficult?

Intensive Care is easier I think, because you only have one patient whereas you have to move in between different patients if you're on the ward. You might have 8 patients you might have to move between, You're busier going into cubicles coming out of cubicles, one bed space going to another bed space talking to one set of parents, then bumping into another set of parents. So it's going to be more difficult on the ward than on Intensive Care –definitely.

That's a good idea, so last question if you have to recommend something to improve the infection control... so do you have any ideas?

I don't know whether I've got one... I think it would just be to have like- how I was telling you about policy and procedures and things like that and things that have come down and are emailed to us and things like that. I think it will be better, for instance, with the swine flu, there's a policy on the computer. I can bet you a £10 that half the nurses have never seen it, we just go by word of mouth. So it would probably be good if things like that are passed down to a ward level and displayed for you to actually... When you've got a patient coming in, and you can just look at the policy quickly and say you know. Rather than think right I've got to log on to a computer, I've got to find it, it's going to take me more than half an hour to find it and then I got to sit down and look at it. I think if things were just there to look at then that'll be good. I think we are good at every other way, I think we do things well.

Thanks you for your participation, and I think it is very useful for my study and also my experiences in children nursing as well. If I have any further question, can I email you? Or when I already transcribed this interview, can I send it to you to check what we are talking today?

Yes.

Appendix- 10.1 Sample of coding stripes

Factors influencing HAIs 8-03-10.nvp - NVivo

File Edit View Go Project Links Code Format Tools Window Help

Heading 1 Arial 16

Code At Name In Free Nodes

Sources

Look for: Interview-ENG Search In Interview-ENG Find Now Clear Options X

Interview-ENG

Name	Nodes	References	Created On	Created By	Modified On	Modified By
ARTY	56	254	3/9/2011 11:19 PM	DMU	11/2/2009 3:42 PM	DMU
CHERRY	59	261	3/9/2011 11:19 PM	DMU	1/8/2010 4:07 PM	DMU
HANA	77	255	3/9/2011 11:19 PM	DMU	11/5/2009 3:38 PM	DMU
NINA	57	205	3/9/2011 11:19 PM	DMU	11/11/2009 2:53 PM	DMU

CHERRY

I wouldn't necessarily say there is one or the other, you have to do it all don't you don't have a choice no matter so... the only time you might get caught down with say physically washing your hands is when your using alcho gel, would be say if your watching your patient next door and there's an emergency going wrong and you need to help them their and then and you haven't got time to run to the sink and wash your hands for five minutes all you can literally do is alcho gel in your hands and that's it. You got to help them and that's what you got to do, that's probably the only time, you really have got an excuse to lack do what your suppose to do other than that you don't really...

So you don't think hand washing is the most difficult to comply even when you are in a rush?

In intensive care -if it's an emergency generally I also say sometimes complies with you know we each have an individual gown for each beds -aprons and the gloves sometimes that works the same with the aprons and things, if its an emergency you can't run to the sink and wash your hands and come to your patient and alcohol gel and put an apron on then put your gloves on you can't do that because your patient might be in the pit of the big black hole by then. So that little group of like downing up

Coding Density

- Education unable to read and write
- Cultures-geographic background
- Cultures and the style
- Culture-mechanure
- Check of time
- Attitude and belief
- Additional practices
- A training day
- A demonstration within ward

M 10 Items Nodes: 59 References: 261 Read-Only Line: 1 Column: 0

Factors influencing HAIs 8-03-10.nvp - NVivo

File Edit View Go Project Tools Window Help

Code At Free Nodes

Look for: Free Nodes Search In Free Nodes Find Now Clear Options X

Free Nodes

Name	Sources	References	Created On	Created By	Modified On	Modified By
A demonstration within ward	37	130	3/3/2010 2:45 PM	DMU	3/10/2011 12:05 AM	M
A journal membership	3	4	3/3/2010 2:44 PM	DMU	3/10/2011 12:04 AM	M
A meeting and conference	21	39	3/3/2010 2:44 PM	DMU	3/10/2011 12:03 AM	M
A training day	9	17	3/3/2010 2:42 PM	DMU	3/10/2011 12:03 AM	M

ARTY - Coding by

ARTY - Coding by Node

Node	Percentage coverage
ARTY	54%
Good practice and Re	~10%
Special concern and	~10%
Parents and Visitors	~10%
Variety of infectiou	~10%
British Style	~10%
Culture-mechanure	~10%
Cultures and life at	~10%
good practice	~10%
Parents and nurses r	~10%
Attitude and belief	~10%
difficulties	~10%
family-children cente	~10%
Cultures-geographic	~10%
Good technique	~10%
nurse with parents	~10%
positive thinking	~10%
GI tract	~10%
The way to prove han	~10%
C lack of measurement	~10%

General Axes 3D

Title: ARTY - Coding by Node

Alignment: Center

Font: Arial

Size: 10

Color: Black

Miscellaneous: Legend Right, Data value labels

M 139 Items

Appendix- 10.2 Sample of tree nodes

Look for: Search In Find Now Clear

Nodes

- Free Nodes
- Tree Nodes
- Cases
- Relationships
- Matrices
- Search Folders
- All Nodes

Sources

Nodes

Sets

Queries

Models

Links

Classifications

Folders

M 240 Items

Tree Nodes

Name	Sources	References	
Hand hygiene	0	0	3
hand care	4	5	
hand hygiene difficulties	15	30	
personal concerning	23	66	
removal all wrist and jeweller	12	15	
Technique	20	29	
unconsistency	9	11	
Invasive procedure	0	0	3
Aseptic technique	12	26	
discard properly	12	25	
do by trained	11	18	
gloves used	12	21	
hand washing	12	24	
Isolation guideline	0	0	3
Criterion of isolation	18	40	
Difficulties of isolation	4	6	
Protective equipment using	10	15	
strongly concerned about iso	13	21	
Waste product management	11	16	
IV cannulae	0	0	3
Aseptic technique	11	13	
change every 3 days	7	8	
check exit site	13	17	
clinical need	10	10	

Appendix- 10.3 Sample of free nodes

Free Nodes

Name	Sources	References	Cre
A demonstration within ward	37	130	3/3/
A journal membership	3	4	3/3/
A meeting and conference	21	39	3/3/
A training day	9	17	3/3/
Additional practices	38	196	3/9/
Advance course	5	6	3/3/
Advance training about IC	2	4	3/3/
An update review by notice board	4	4	3/3/
Antimicrobial use	13	23	3/3/
Attitude and belief	46	299	3/3/
C difficult to detect	3	7	3/3/
C forget	20	55	3/3/
C lack of consistency	1	4	3/3/
C lack of authority	3	3	3/3/
C lack of budget and resource	16	34	3/3/
C lack of concern	11	15	3/3/
C lack of confident	3	3	3/3/
C lack of experience	18	38	3/3/
C lack of knowledge	3	7	3/3/
C lack of measurement	5	8	3/3/
C lack of staff	9	19	3/3/
C lack of time	21	47	3/3/
C Misunderstanding	16	27	3/3/
C not comfortable	7	7	3/3/
C poor practice	1	2	3/3/
C poverty	1	2	3/3/
C pretend to do	2	2	3/4/
Central line care	2	3	3/3/
Complain and feedback	4	6	3/3/
Culture- Greeting	1	1	3/3/
Culture-family	1	1	3/3/
Culture-multiculture	19	56	3/4/
Culture-religion	12	27	3/3/
Cultures and life style	26	83	3/3/
Cultures-geographic background	17	55	3/3/
Doctor duties	8	11	3/4/
Education	3	3	3/3/
Education-Diploma	3	5	3/3/
Education-High degree	1	1	3/3/
Education-Mandatory	1	1	3/3/
Education-unable to read and writ	6	7	3/3/
En bed capacity	6	6	3/4/

Appendix-10.4 Sample of summary report

Node Summary Report

Project: Factors influencing HAIs
Generated: 3/10/2011 12:38 AM

AOM Case

Created On 3/4/2010 3:54 PM **By** DMU
Modified On 3/9/2011 11:21 PM **By** M
Users 1
Cases 3

Type	Sources	References	Words	Paragraphs	Region	Duration	Rows
Total	3	38	1009	56			0

AOY Case

Created On 3/5/2010 2:41 PM **By** DMU
Modified On 3/9/2011 11:21 PM **By** M
Users 1
Cases 4

Type	Sources	References	Words	Paragraphs	Region	Duration	Rows
Total	4	52	1993	74			0

ARTY Case

Created On 3/4/2010 2:50 PM **By** DMU
Modified On 3/9/2011 11:21 PM **By** M
Users 1
Cases 0

Type	Sources	References	Words	Paragraphs	Region	Duration	Rows
Total	3	80	5526	100			0

CHER Case

Created On 3/5/2010 3:32 PM **By** DMU
Modified On 3/9/2011 11:21 PM **By** M
Users 1
Cases 1

Type	Sources	References	Words	Paragraphs	Region	Duration	Rows
Total	4	72	2876	85			0

Appendix- 11 Letter support from the head of children hospital, gatekeeper



University Hospitals of Leicester **NHS**

NHS Trust

Susheewa Wickackull
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Leicester
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8th August 2008

Tel: 0116 254 1414
Fax: 0116 258 5631
Minicom: 0116 258 6878

To Whom It May Concern:

**Re: Susheewa Wickackull
PHD Student at De Monfort University**

I am writing to provide my support for the above named student to undertake a PHD Research Study "A comparison of the factors which influence infection control in paediatric wards in England and Thailand" with in the children's wards at University Hospital of Leicester subject to the following conditions:-

That Susheewa obtains an honorary contact from the Research & Development Department to undertake the study.

- That for the England element of the study Susheewa operates in an observational capacity due to the fact that she is not able to practice as a Registered Nurse in the United Kingdom.

I trust that this clarifies my support and please do not hesitate to contact me for further clarification.

Yours sincerely

Michael Clayton
Head of Nursing -Children's Services

Appendix- 12 Poster presentation



A comparison of the factors which influence infection control in paediatric wards in England and Thailand.

Susheewa Wichaikul, Prof. Judith Tanner and Prof. Denis Anthony



Background: Hospital acquired infections present a real problem for patients. Five to ten percent of patients in developed countries develop an infection while this increases between two to twenty times for patients in developing countries. Paediatric patients, especially high-risk neonates and infants, are at a high risk of infection because of their vulnerability.

Methods: The purpose of this study was to explore the factors which contribute to the spread of infection among children in paediatric wards in England and Thailand using an ethnographic approach. Ten nurses in England and ten nurses in Thailand were recruited using purposive sampling. Participant observation and interviews were carried out to obtain data in clinical settings. Data from the observations and interviews were transcribed and coded using thematic content analysis.



Are you sure that your child won't get germs from you by kissing?

Results: Children hospitals in Thailand and England face similar infection control problems, especially poor hand hygiene. Important factors include attitude and beliefs. Training and advice can raise perceptions and promote good practice. However, in terms of different cultures and circumstances, the key factors affecting compliance between the two countries are resources, lifestyle, and religion.



Conclusion: Even within the same hospital, different cultures result in different factors which impact on paediatric patients. Personal concern for infection control practice is the most significant factor influencing compliance.

References

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3. http://www.workingnurse.com/images/articles/big/webiStock_000000581479Medi.jpg

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