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What works? a realist evaluation of the role of intermediaries in promoting best practice in infection prevention control

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**WHAT WORKS? A REALIST EVALUATION
OF THE ROLE OF INTERMEDIARIES IN
PROMOTING BEST PRACTICE IN
INFECTION PREVENTION AND CONTROL**

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Thesis submitted to Bangor University for the degree of

Doctor of Philosophy



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“A theory must be tempered with reality”

(Jawaharial Nehru)

Abstract

This thesis is a report of a theory driven study designed to evaluate the role of the 'intermediary' in promoting best practice in infection prevention and control.

Study aim and objectives:

The aim of the study was to seek the programme theories that show how intermediaries might promote best practice in infection prevention and control; to determine what works, for whom, how, and in what respects.

Methods:

Realist evaluation was used to elicit a better understanding of the mechanisms and contexts that lead to outcomes (CMOs) for the role of intermediaries in infection prevention and control programmes. A realist review led to case studies being conducted consecutively within two NHS hospitals in the United Kingdom, with data comprising of interviews (n=32), non-participant observations (n=5) and documentation review.

Findings:

Four conjectured CMOs were developed and refined over two case studies. The study has shown that intermediary presence and proximity in clinical areas is important, and together with ways in which intermediaries watch over practice (through overt and covert visibility), can promote better adherence to infection control practice. The theory of self-surveillance emerged from the findings to show how intermediaries can promote self-monitoring by clinical staff. Intermediaries' styles and approaches are important, and can lead to clinical staff feeling individually supported. Policy discourse and enforcement, and the ways in which intermediaries provide feedback can contribute to promoting good habitual behaviours. Practice based educational approaches are more likely to focus individuals' attention on infection control and heighten awareness of infection control in clinical areas.

Recommendations:

The theoretical propositions uncovered in this study could inform policy and practice in that they indicate some factors that could be built into to support future intermediary programmes. Specifically, these include; clinical presence and visibility, shifting away from the focus on roles to understanding the mechanisms which bring about behaviour or practice change in infection control practice. Additionally, an organisational commitment is required to invest in programmes that are clinically embedded and which support the development of intermediaries who have the potential to influence practice.

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Secondly, I would like to acknowledge the contribution of the study participants, who were generous with their time and with their insights into the domain of infection control in current healthcare practice, and without whom the study would not have been possible.

Finally, I would like to acknowledge the contribution of my family and friends. No book or article can truly prepare the PhD student for the experience, but the support and enthusiasm from family and friends can ease the process and provide assistance in so many different ways! To my parents, Griff and Eirllys, thank you for your unending encouragement. To Dei, Tomos and Alys, a special thanks for your love and patience.

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Glossary of terms

Best practice: for this study, healthcare practice which is based on the best available evidence

Configuration: patterns of context-mechanism-outcome, '*if-then*', propositions that vary in degree of abstraction and specification (Pawson & Tilley, 1997; Pawson, 2013)

Conjecture: in this study, hypothesised or inferred propositions

Context: Complex layered conditions which influence the success or failure of different interventions or programmes (Pawson, 2013)

Cumulation: in this study, the process of shifting between abstract and specific CMO configurations (Pawson & Tilley, 1997)

Critical realism: a philosophy of science which distinguishes between empirical, actual and real layers of reality (McEvoy & Richards, 2006)

Demi-regularity: a pattern which shows, to a degree, people's reasoning under particular circumstances

Dyad: in this study, the pairing of contexts and mechanisms to show the interdependence between them

Hypotheses: assumptions which in realist terms describe, "what might work for whom in what circumstances" (Pawson & Tilley, 1997: 85)

Healthcare-Associated Infections (HCAIs): "infections that are acquired as a result of healthcare interventions. There are a number of factors that can increase the risk of acquiring an infection, but high standards of infection control practice minimise the risk of occurrence"

<http://www.hpa.org.uk/Topics/InfectiousDiseases/InfectionsAZ/HCAI/>

Intermediaries: in healthcare, a range of people who link between policy, evidence and individuals in clinical areas to promote best practice

IPC: Infection Prevention and Control

Mechanisms: what influences the reasoning and behaviour of people –“the agents of change” (Pawson, 2013:115)

Middle-range theory: sits at the junction between reality and underpinning theory with the right level of abstraction so that description and close study can result in transferable lessons (Pawson, 2013)

Outcomes: in realist terms, patterns which confirm the success (or failure) of context-mechanism theories (Pawson & Tilley, 1997)

Proposition: a statement that can be tested to affirm or dispute its truthfulness

Realist Evaluation: a theory-driven approach which “supposes that *regularities* in the patterning of social activities are brought about by the *underlying mechanism* constituted by people’s reasoning and the resources they are able to summon in a *particular context*” (Pawson & Tilley, 1997:220)

Realist review: the process of evidence review which follows the realist approach, also known as the realist synthesis

Triad: in this study, the context-mechanism-outcome group of three concepts

Outputs

Publications

Williams, L., Burton, C. & Rycroft-Malone, J. (2013). What Works: a Realist Evaluation Case Study of Intermediaries in Infection Control Practice. *Journal of Advanced Nursing* 69 (4) 915–926

Conference Posters/Presentations

RCN Annual Nursing Research Conference. The Sage, Gateshead, May 2010
Williams, L., Burton, C. & Rycroft-Malone, J. “*Using Realist Synthesis to Review the Literature in Infection Control: A Welcome Approach for the Real World of Nursing?*”

Knowledge Utilization Colloquium. Halifax, Nova Scotia, June 2010 Williams, L., Burton, C. & Rycroft-Malone, J. “*A Realistic Evaluation of Intermediaries in Infection Control Practice: Investigating and Understanding Context*”

Knowledge Utilisation Colloquium. Belfast, June 2011 Williams, L., Burton, C. & Rycroft-Malone, J. (2011) “*Going Fishing! Uncovering Mechanisms in a Realistic Evaluation Study*”

Foreword

I qualified as a general nurse in 1985 and as a registered midwife in 1988. I am now employed by Bangor University as Lecturer in Adult Nursing. As part of my academic development, I wanted to consolidate my interests in ways in which to promote best practice, through learning about the potential contribution of the intermediary, and understand the ways they operate. Through an initial awareness of the important gaps which exist in the current evidence base, to explain how different interventions can be successful, I was particularly interested in learning how intermediaries contribute towards promoting best practice in the real world of healthcare practice.

A background of twenty years in clinical practice has instilled in me a sense of what is important to patients when they encounter healthcare services. My clinical background has provided me with opportunities to learn from patients as to what they value in terms of services related to their health. One domain of healthcare where value and trust is particularly important is infection prevention and control, where patients and their families require reassurance that evidence based practice is being consistently implemented to reduce the risks to them of acquiring healthcare associated infections and generally promote their safety. I maintain strong links with the domain of infection control through my current role and responsibilities in nurse education, and am acutely aware of the challenges that prevention and control of healthcare associated infections present for the practice of healthcare.

My clinical experiences and current role led me to design this study, to explore the complex phenomenon of intermediaries and their role in promoting best practice. In particular, I was interested in generating new findings which could be used to inform both the existing infection control domain, as well as other important areas of healthcare which use different intermediaries in existing roles that aim to promote best practice. The findings of the study could support future developments through, for example, guiding the design and development of specific intermediary models within complex healthcare programmes.

In 2010, I was awarded a PhD Fellowship, by Research Capacity Building Collaboration Wales (rcbc). This is a national initiative, which involves collaboration between six Universities within Wales, ultimately to promote research capacity amongst healthcare professionals. Funding for the initiative is received from the Welsh Government, and my successful application for a three year funding period was secured through a two-staged process. Joining the RCBC community of scholars enabled me to focus on developing and undertaking the study whilst concurrently being supported to develop my researcher skills through a series of bespoke master classes, presentations and research training. The skills I have developed through this programme have been invaluable to my continuing development as a healthcare researcher.

CHAPTER 1:

The study in context

1.1 Introduction

This research study advances understanding of the role of intermediaries in promoting best practice, and the intention of this introductory chapter is to set the scene for the thesis. It is generally recognised that some of the ways in which best practice in healthcare can be achieved remain poorly understood, and changing individuals' behaviours or practice is often challenging. There is growing recognition of the potential of certain individuals, collectively termed 'intermediaries', and their contribution to changing individuals' practice or behaviours, thereby leading to the promotion of best practice for patient care.

In this chapter, the concept of the intermediary is introduced, to outline where problems currently exist in understanding their potential contribution. It is argued that gaps exist about the exact ways in which intermediaries can be successful to promote evidence-based practice. The quality and safety agenda, and evidence-based practice are ubiquitous terms in healthcare, and a brief synopsis is presented to show how the concept of the intermediary is currently positioned within the literature. There is growing recognition that understanding context is essential to the success of any healthcare intervention or programme, and therefore the concept of context is introduced, to highlight its significance for this study and to show the model of context which provides the theoretical basis for the thesis. Theories which can illuminate the factors which influence the process of getting evidence into practice are introduced, especially to explain the complexities that exist in understanding different interventions which aim to promote best practice.

The domain of infection prevention and control is the "science concerned with stopping patient harm and death" (Storr et al, 2013: 4), and is recognised as one area of healthcare practice where researchers continue to seek the most effective ways in which best evidence can be promoted and implemented in routine practice. In infection control, there is currently a general lack of clear evidence to demonstrate the potential impact of the intermediary in promoting best practice. The rationale for

placing this study in the domain of infection prevention and control is presented. Across the globe, the prevention and management of healthcare associated infections (HCAIs) in healthcare remains a persistent and complex conundrum. Whilst some of the interventions known to prevent or control HCAIs are not new, HCAIs have still not been eradicated, and it is concerning that their effects can have severe repercussions for patients and incur massive costs. Even in today's highly technical era, healthcare providers, policy makers and frontline staff still struggle to prevent and control HCAIs, and they remain a risk for patients (Storr et al, 2013).

The current infection control policy backdrop is reported, highlighting where gaps currently exist between policy and routine practice. Different organisational and individual factors have been cited as influencing the process of embedding best practice in infection prevention and control. Attention is drawn to the challenges of getting individuals (i.e. healthcare staff in this study) to modify or change their behaviours, and to the gaps that currently exist in understanding the role of intermediaries in this process. This chapter concludes with the study's main aims and objectives, and a brief summary of the content of each chapter.

1.2 The Intermediary

1.2.1 Defining the concept of the intermediary

Interpersonal contact between people has long been recognised as being one of the triggers to facilitating knowledge exchange, especially through the use of individuals' expertise and influence (Thompson et al, 2006; Milner et al, 2006), as well as through the explicit use of tacit knowledge. In knowledge translation, recent recognition that more active interventions are required to ensure better dissemination and use of evidence in the real world has led to interest in exploring the potential impact of intermediaries (Ferguson et al, 2004). The term 'intermediary' is often used to describe a situation where a third party is used to act in different circumstances (Thompson et al, 2006), and describes a "range of interchangeable roles between producers and users of evidence" (Hoong Sin, 2008: 85). Within the innovation process, intermediaries are described as actors who perform certain tasks within the process (Howells, 2006).

Originally conceptualised as middle men (Howells, 2006), intermediaries are generally described as people who are involved in a specific area, working towards a particular goal, and the broad term encapsulates the “common defining feature of numerous overlapping terms” (Chew et al, 2013: 337). There is general agreement in the literature that intermediary roles have grown in response to the recognition that increasing the uptake of knowledge and impacting on the behaviour or change in practice of individuals require more active than passive interventions (Thompson et al, 2006). Howells (2006) refers to other descriptors of the intermediary role that are used to denote the role of intermediaries in the innovation process such as third party, bridgers and brokers. However, terms are often used interchangeably and boundaries are often blurred when it comes to clear interpretations of different intermediaries.

1.2.2 Intermediary functions

The literature reflects the ambiguity that surrounds the functions of intermediaries. The term mediation is often used to describe what intermediaries do, implying that they use resolution actions, and remain impartial (Gerrish et al, 2011). In this way, it is implied that intermediaries are often used to introduce new ideas and mediate where required between different parties. The existing literature describes functions of intermediaries which can be captured under the broad heading of knowledge transfer. Descriptions of intermediary function focus on their capacity to act as change agents, describing their functions to implement change and be innovative (Thompson et al, 2006), so that they impact on the diffusion process speedily (Howells, 2006). Intermediaries are generally considered to have a level of expertise, be knowledgeable, act as information sources, and provide education and teaching in order to facilitate knowledge transfer for others (Milner et al, 2006: Thompson et al, 2006: Doumit et al, 2007). However, for Ferguson et al (2004) perceiving intermediaries as knowledgeable people is not sufficient - intermediary function should also extend to being successful in implementing the knowledge in practice. To further confound clarity about intermediaries, according to Thompson et al (2006), they could operate at any level however, evidence to support this is lacking.

1.2.3 Intermediary characteristics

It is generally agreed that intermediaries use interpersonal skills which enable them to successfully influence the transfer and use of evidence (Milner et al, 2006). Others believe that intermediaries possess innovative properties, credibility, and have a high level of proficiency (Ferguson et al, 2004: Lyons et al, 2006: Thompson et al, 2006). Social learning theories posit that liked and trusted individuals are more likely to be successful in triggering behavioural change in others (Doumit et al, 2007). Technical competence and knowledge are two other characteristics used in the literature; both allude to the powerful nature of intermediaries due to the importance placed on them by others (Northouse, 2004). Leadership, managerial and power credentials are described as essential components of specific intermediary roles (Ferguson et al, 2004: Milner et al, 2006). Elsewhere, others have defined intermediaries as individuals who possess certain interpersonal skills, acknowledged for their skills in influencing or changing the behaviour of others (Locock et al, 2001: Doumit et al, 2007). Biebel et al (2013) found that trust, neutrality and transparency, collegiality and enthusiasm were important qualities that facilitated the work of intermediaries.

1.2.4 Intermediaries in healthcare

In healthcare, there is an acknowledgement that existing intermediary roles can achieve a level of success when it comes to promoting best practice, through the ways in which they act to “bridge the communities of research and clinical practice” (Milner et al, 2005: 900). In the nursing literature, the term intermediary has been used to refer to individuals “within the practice environment who can influence nurses toward specific goals” (Ferguson et al, 2004: 325). As part of the overarching efforts to translate evidence into everyday practice in healthcare, making use of intermediary roles is advocated according to Chew et al (2013). However, the literature reflects the general struggle to capture a common understanding of the intermediary and understand their contribution to the success of knowledge translation in healthcare. Biebel et al (2013) suggest that further research is required to enable the development of evidence-based recommendations for healthcare practice.

Seeking the specific ways in which intermediaries may operate in healthcare is challenging because of a lack of consensus about roles. Specific criteria for different intermediary roles are often focused on levels of expertise, academic credentials, and whether they operate internally or external to organisations (Rycroft-Malone et al, 2002). Specific attributes of healthcare intermediaries are described as likeability, trust, charisma, as well as their ability to be good role models (Ferguson et al, 2004). Gerrish et al (2011) found that advanced nurse practitioners, acting as linkage agents, used interpersonal interactions to promote evidence based practice.

In healthcare literature, the term intermediary is used synonymously with a range of roles (Ferguson et al, 2004: Milner et al, 2005: Thompson et al, 2006). Several roles have been collectively described under the intermediary umbrella, including clinical nurse educators, clinical nurse specialists, practice developers, knowledge brokers (Milner et al, 2005), and, more broadly defined as champions, facilitators, opinion leaders, change agents, and linking agents (Ferguson et al, 2004). The terms are often used interchangeably in the literature without clear definitions, for example, change agents are described as opinion leaders (Stetler et al, 2006), or opinion leaders are described as product champions (Locock et al, 2001). In healthcare, facilitation skills are recognised as important intermediary properties. Facilitation is an umbrella term covering different disciplines and relates to a process of assisting or easing a process for others (Harvey et al, 2002). From different interpretations of facilitation in the literature, it is no surprise that definitions of facilitators in practice also vary (Harvey et al, 2002). Moreover, the role of the facilitator has not been well-defined or established in the literature (Stetler et al, 2006)

Opinion leaders range from individuals who act as the link between the innovation or new knowledge and those who ultimately will be using the knowledge (Katz & Lazarfeld, 1956) to a more protective role, whereby the opinion leader acts as gatekeeper as controls the information that filters through to the end user (Lewin, 1947: Allan & Cohen, 1966). Opinion leadership, on the other hand, refers to the level which an individual can favorably and consistently influence another's behaviour/attitudes (Rogers, 1995). The educational merits of the opinion leader have not gone unnoticed, and informal and formal approaches have been employed

(Doumit et al, 2007). The opinion leader's ultimate strength is their position within an organization or system that allows them to receive and impart communication effectively; "they are at the centre of interpersonal communication networks – interconnected individuals who are linked by patterned flows of information" (Grimshaw et al, 2006:2). Social marketing strategies include opinion leadership amongst other interventions, when behaviour change is the ultimate goal (Wright et al, 2006).

Attempts to capture the utility and effectiveness of opinion leaders in the healthcare literature have drawn on the sociometric approach coined by Hiss (1978). In medicine, Hiss (1978) recognized the frequently unsuitable traditional means of learning in medicine, and explored the informal concept of influential individuals within different communication networks. Through a process of refining items through questionnaires administered to different medical practitioners in community hospital settings, Hiss and colleagues (1978) developed a nine item educational influentials tool, broadly themed: communication, knowledge and humanism. Applying this tool in practice enables the identification of influential individuals by their peers. The tool has since been revalidated and has since been adapted to be used in other healthcare areas (Gryzbowski et al, 2000). Childers (1986), on the other hand, used a self-designating method in a marketing study. Propositional constructs which are more likely to be associated with successful examples of opinion leadership and diffusion/adoption are, according to Childers (1986); creativity, risk, and technical skills, based on previous studies and their findings from the marketing field.

In opinion leadership literature, Grimshaw et al (2006) support Rogers (2003) that the opinion leader's position is secured by a mix of their competence, accessibility and acceptance of the system's rules and behaviours, but that they remain essentially informal. Rogers (2003) describes this process as being earned by the individual. In terms of their educational approaches, there is little evidence as to which strategy (formal or informal) works best in practice (Doumit et al, 2007). However, it is clear that a degree of formality exists where intermediaries are employed or have specific responsibilities within a particular organization (Thompson et al, 2006).

There is an acknowledgement that certain intermediaries, described as champions, can achieve a level of success when it comes to promoting evidence-based practice and care for patients. Initially, the term 'champion' was coined in a paper by Schon (1963), exploring ways to develop new initiatives in the military service. Schon places the champion firmly within organisations, discounting the idea of bringing in or hiring champions from the outside world. However, according to Schon (1963), the champion must be placed in a certain position within the organization, one of value, to enable them to freely use their skills and be respected. It is also clear that Schon's vision of the successful champion must incorporate a clear understanding of the working ways of the organisation, with an ability to play the social systems and networks within the organisation, with the aim of promoting their idea or innovation.

Schon implied that champions need to be risk-takers, aggressive, and powerful, his work providing a broad structure on which later champion modeling was subsequently based. The early profile of the champion has been refined over time, probably as a result of examples which fit with Schon's criteria, but also where individuals are recognized for different attributes. One such example is cited by Rogers (2003), who recognized the potential of successful champions operating at different levels, not necessarily from a position of power or authority which Schon had earlier decreed. Schon's vision of a champion rang true for Rogers in many ways, for example, in the enthusiastic manner in which a champion thrusts all his/her energy into a project. However, Rogers (2003) pointed out that success of the champion primarily depends on the nature of the innovation itself. For example, a highly technical innovation of a product might require the skills of a senior, powerful champion. However, less obtrusive, or lower level interventions, might benefit from a champion operating at peer level.

So far, this section has discussed that what links the concept of champions is their general relation to product innovation. By the early 90s, organizational adopters of new ideas/innovations recognized the potential of champions to follow through the process of diffusion of the innovation and implementation (Howell & Higgins, 1990). What became apparent around this time was that the portfolio of champion skills and attributes, previously recognised for product innovation, could also be generalized to include champions for different purposes (Howell & Higgins, 1990).

However, what was missing was sound evidence to support this generalization. A comprehensive toolbox of properties was identified as being used by information-technology champions (Howell & Higgins (1990). In particular, the study illuminated distinctive champion characteristics which included self-confidence, persistence, energy, and risk-taking ability (Howell & Higgins, 1990). Together these, alongside specific leadership qualities and levels of experience, added up to what the authors believed then were the essential criteria for potential champions. What remains missing, though, is clear evidence to support how champions, involved in the implementation of more abstract, complex interventions, may need to possess different skills.

Markham (1998) attempted to seek further clarification by conducting a longitudinal study to examine strategies used by champions and show a direct link between their actions and the outcomes for specific programmes. The study demonstrated the complexities of understanding the champion. The focus of the enquiry were the tactics that champions use to persuade or influence others, and how the state of the relationship between champion and players involved in a programme influenced the success of the programme. Fifty three champions of innovative projects (identified through a study specific champion criteria), and their assigned teams, were studied at two points. Through a process of questionnaires and interviews, mixed results were found which did not affirm the positive nature of champion programmes. The results only partially supported the notion that champions' influence projects in a positive way.

Shifting the focus to healthcare, champions have traditionally been recognised in the organizational, knowledge transfer, and utilization literature, and the properties of champions in product innovation have been generally assumed to be transferable to the healthcare setting. On paper, the concepts previously described about the nature of the champion would appear to fit well within complex healthcare settings, where a combination of organisational, cultural, social and political factors influence the core motive of providing safe, evidence-based care to patients. Thus, it would make sense to embrace champions, recognizing their potential in other areas such as management and production disciplines. A range of champion attributes are applicable to the healthcare sector, according to Thompson et al (2006) in a literature

review of key concepts in knowledge transfer. Collectively, the champion is perceived as an individual having specialist knowledge, recognizing a need for change, promoting a new idea with enthusiasm and determination, and demonstrating passion for a project (Thompson et al, 2006).

However, despite the existing evidence base that describes the champion, in healthcare settings, collective agreement on what makes an ideal champion has not yet been attained. Greenhalgh et al (2004) argue that not enough is known about who champions are, or how their skills may be used most effectively. Opinions are divided about the desirable attributes of successful champions based on the complex nature of the healthcare discipline. In an exploration of what makes the best champion in the patient safety arena, Soo et al (2009) conducted a multisite case study of champions within rapid response team initiatives. The study found that all champions used their position within the organization, be they managerial or clinical, to advance implementation of the initiative. In addition, champions in managerial positions were found to consistently support the work of champions at clinical level (Soo et al, 2009). This study highlights that giving individuals the title champion, based on the provision of education is not ideal. Instead, it is more important to firstly identify valuable champion properties amongst individuals, which can be nurtured and supported with education and training (Soo et al, 2009).

Biebel et al (2013) also caution that developing the internal capacity of intermediaries is contingent on the nature of the setting and the underpinning context. Although research has enabled us to understand how champions operate in general, few studies have examined how the context (i.e. factors related to the organisations in which champions operate, as well as factors outside the organisation's control,) influence their success or failure, and understand how different conditions can impact on the intermediary role.

1.2.5 Intermediaries in infection control

Descriptions of role holders operating in infection control find little clarity and consensus about intermediary functions and desired impacts (Appendix 3.4). In infection control, this could be largely because of the specific versus diffused nature of the roles, and the different locations in which they operate. Nurses, doctors, coordinators, and clinical nurse specialists with designated infection control roles, provide specialist advice and support for other clinical staff, and require a high level of expertise and knowledge. These role holders are often employed as members of infection control teams to contribute to achieving the strategic aims of the organization and support service delivery through specific responsibilities. Senior people in healthcare settings with specific responsibilities for quality of care and education, for example, matrons and practice facilitator educators, also have designated infection control responsibilities as part of their remit, with the intention that they provide leadership and bridge the gap between evidence and practice.

1.2.6 Significance of the evidence in relation to this study

Whilst some evidence exists to explain the potential of the intermediary in promoting best practice, interpretations in the literature of what intermediaries do are varied, often describing, in a broad approach, to individuals who takes the middle position in transactions, and who may/may not, be specialist within their role. However, the literature points to the potential of different roles, for example, champions, which should be included within multifaceted interventions that lead to successful practice change (Soo et al, 2009). This study will show that behaviour or practice change is more related to the ways in which individuals' intermediary actions interact with contextual conditions. The interventions that are more likely to result in promotion of best practice are contingent on the levels of clinical presence and visibility of the intermediary, the specific ways in which they engage with clinical staff and provide performance feedback, and their approaches to infection control education, as opposed to their role descriptions.

1.2.7 Summary

There is general consensus that “ it seems unlikely that a consistent evidence base on the effectiveness of intermediary interventions will emerge, given the breadth of the concept, its context-dependent and contingent nature, and the complexity of the social processes involved –all of which will confound experimental research approaches” (Chew et al, 2013: 337). However, it is argued in this thesis that a clearer understanding of intermediaries, and their relationship within the social context of practice, is imperative in order to formalise their role as channels for promoting best practice, through, as described by Rogers (2003: 5), a “special type of communication”. Whilst some of the ways in which intermediaries currently promote best practice may be identifiable through examination of their roles, other impacts may be as yet undisclosed, to truly understand their contribution. The evidence provides a degree of understanding how intermediaries can be successful through theories of innovation diffusion, imitation, and social influence (Tarde, 1969: Rogers, 2003: Rashotte, 2007). However, the exact impact of their influence on the practice or behaviour of others is often not articulated. In other words, it is often difficult to untangle their exact contribution to promoting best practice in healthcare, and it is this gap that this study seeks to close.

1.3 Evidence-based practice

Interpretations of evidence-based practice suggest that the term encompasses a number of linked themes such as knowledge transfer and utilisation (Rycroft-Malone, 2006). Evidence-based practice is viewed as a continually evolving process (Rolfe & Gardner, 2006), and is recognised to be a complex phenomenon. Marks (2002:5), describes evidence based practice as “an adaptation of epistemology and methodology derived from the natural sciences and applied to fields of medicine, health care and education”. Whilst it has been the mind-set of the healthcare field in the last twenty years (McKenna et al, 2000: McInnes et al, 2001), the growth of evidence based practice has led to debates around its finer constituents (McInnes et al, 2001: Rycroft-Malone, 2006). Different sources of evidence can be accessed, and whilst healthcare practice should be based on the best evidence, “these decisions should be made by those receiving care, informed by the tacit and explicit knowledge of those providing care, within the context of available resources”

(Dawes et al, 2005: 7). This quote highlights the complex nature of the process, and underpins the challenges faced by intermediaries who are placed in roles designed to support healthcare staff to promote best practice, for example; “by mentoring others, acting as an information source, and assisting in the development of policies and procedures based on available research evidence” (Milner et al, 2005: 900).

One response to untangling the term ‘best’ in relation to evidence –based practice has been to develop and formulate a range of hierarchies and classification based on scientific findings (Dobrow et al, 2004; Rolfe & Gardner, 2006). However, evidence-based practice should be in touch with reality, and led by sound evidence, as opposed to prescribed practice (McKenna et al, 2000). The sole use of scientific, positivist approaches to exploring social phenomena is now being challenged in the health and social arenas (Farrell & Grichting, 1997). Randomised controlled trials, for example, whilst heading the hierarchy of evidence, use target populations in controlled environments, and their subsequent findings do not always translate well to every setting (Tunis et al, 2003). Oborn et al (2010) highlight the challenges of applying evidence within complex clinical environments where knowledge is “characterised by proliferation of information, fragmentation, distribution, and high context dependency” (French et al, 2009:2).

1.4 The Quality and Safety agenda

In healthcare, the zeitgeist of our time is patient safety (RCN, 2013), which should be a precondition and not merely a priority, according to Leape et al (2009). The United Kingdom government has signalled its intent to place patient safety at the top of the agenda with the conception of the National Patient Safety Agency (Leape et al, 2009). Whilst initiatives that are targeted towards improving the quality of care and securing patient safety are becoming increasingly ubiquitous (Parand et al, 2011), the realities of practice are often different to that which is recommended through policy or guideline implementation (Robertson & Jochelson, 2006). Patient safety in the modern day health service is dependent on culture change across organisations, as opposed to improvement methodology, policy, or evidence (Leape et al, 2009). Soo et al (2009: 123) argue that, to ensure patient safety, “it is in the best interest of healthcare organisations to maximise their chances of successful implementation by having as many facilitating factors in place as possible”.

Understanding what different intermediaries offer to the quality and safety agenda can be best advanced through better clarification of the attributes of the role-holders (Thompson et al, 2006). When new intermediary roles are developed, there is often an assumption that interpersonal contact is pivotal to increasing the use of knowledge and influence behaviours (Backer, 1991). However, it is argued in this study that the focus should be on a better understanding of how the intermediary leads to a change in the thinking or behaviour of others. This is an important area to pursue, as the literature already recognises the potential of the intermediary to promote knowledge transfer at the edge of practice (Hoong Sin, 2008), with the presence of different intermediaries being linked with successful “patient safety practice change” (Soo et al, 2009:123). Patient safety in the infection control domain is discussed in section 1.9.4.

1.5 Context

According to Marks (2002:7), “evidence is always a contextualised, negotiated product, not an a priori given”. For this study, understanding the contextual factors that influence what intermediaries do and how they operate is important to illuminate their contribution to promoting best practice. There is general consensus in the literature that improved understanding of the effectiveness of different interventions or programmes requires a grasp of the underlying contextual factors (Eccles et al, 2005). However, the current evidence base often lacks clarity on the meaning of context (McCormack et al, 2002). Understanding context is essential to consider how evidence is interpreted and used in clinical practice (Dobrow et al, 2004), however its influence on the success or failure of different intermediary programmes in promoting best practice is currently an under-studied area.

According to Kaplan et al (2012: 13), context includes “characteristics of the organisational setting, the environment, the individual, and their role in the organisation”. In healthcare studies, context is often defined as levels ranging from individual, group, organisation, and the environment (Dopson et al, 2008). For example, how the environment can influence the success or failure of innovations was embodied in the work of Tarde (Kinnunen, 1996). Organisational context is often defined as factors which can influence the success or failure of interventions or programmes (Seffrin et al, 2008). However, the levels approach to analysing context

may limit understanding of how different levels interact with each other (Dopson et al, 2008). Context can have intended and unintended consequences on programme interventions, and better understanding of contextual factors can help illuminate if programme failures occur as a result of the interventions or the contextual conditions underpinning them (University of Ottawa and Ontario Ministry of Health, 2009). For this study, to understand how context interacts with and influences the success or failure of different intermediaries operating in complex healthcare systems, required a different approach, as the focus on levels could potentially miss other significant factors that influence individuals' behaviours or reasoning.

1.5.1 Conceptual models of context

Pettigrew (1987) and McNulty and Ferlie (2002) proposed that context be examined vertically as well as horizontally, so that the interdependency between different levels could be better understood (Dopson et al, 2008). According to Pettigrew (1987: 656), “an approach that offers both multi-level, or vertical analysis and processual, or horizontal analysis is said to be contextualist in character”. Pettigrew (1987: 657) defined outer contexts, in organisational terms, as “social, economic, political and competitive environment in which the firm operates”. Appropriately for public services, the term inner context has been used to describe the “structure, corporate culture, and political context within the firm through which ideas for change have to proceed” (Pettigrew, 1987: 657). Further work by McNulty and Ferlie (2002) explored context in terms of micro to macro levels but their analysis focused on the interplay between the environmental factors and the organisational response (Dopson et al, 2008). One problem with adapting such an approach to explore the contextual conditions influencing programmes or interventions is that it may lack consideration to the “multiple realities of stakeholders” (McCormack et al, 2002: 100). It was important for this study that the theoretical model of context reflected the realities of clinical practice and the conditions underpinning the role of intermediaries, acknowledging that the success of intermediaries is contingent on a combination of individual and contextual factors (Locock et al, 2001). The next section describes the chosen model for the study.

1.5.2 Model of context as the theoretical basis for the thesis

The development of a conceptual model to explain the determinants of diffusion, dissemination, and implementation of innovations in healthcare highlights the importance of versatile approaches to examining context (Greenhalgh et al, 2004b). The work of Greenhalgh et al (2004b) provides a synthesis of interpretations of context for diffusion, dissemination and sustainability of innovations in healthcare, and was the chosen model for this study. Greenhalgh et al (2004b) provide definitions of outer and inner context so that context is broadly defined in terms of these two areas. Greenhalgh et al (2004b:195) posit that inner contexts are the factors that can impact on the implementation and sustainability of programmes, “both the ‘hard’ medium of visible organizational structure and the ‘soft’ medium of culture and ways of working”. Inner context is important in healthcare systems, as hard and soft factors can impact on policy implementation. The structural features of the organisation, the absorptive capacity for new knowledge, the receptivity for change, and system readiness for change are factors that can be explored to examine the inner context. A receptive context includes “leadership, vision, good managerial relations, supportive organisational culture, coherent local policies based on high –quality data, clear goals and priorities, and effective links with other organisations” (Greenhalgh et al, 2004a:195). In the infection control literature, for example, organisational management and leadership are contextual factors which are perceived to be essential for success in promoting best practice (Griffiths et al, 2009).

Outer context can refer to factors that are considered to be outside an organisation’s control. Outer context comprises of factors external to the organisation (Greenhalgh et al, 2004b), and can relate to individuals (for example, attitudes, behaviours, and perceptions), or environmental factors, such as political drivers (French, 2005). Factors to consider which examine outer context include the extent of interorganisational networks and networking initiatives, the wider environment and political directives (Greenhalgh et al 2004b). The model is illustrated below:

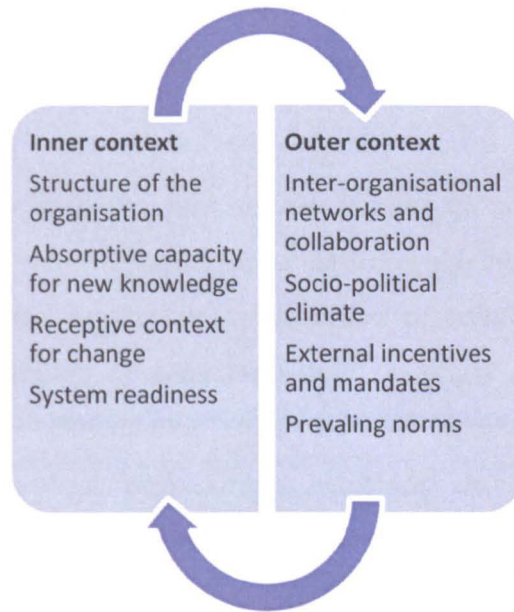


Figure 1.1: Theoretical model of context (adapted from Greenhalgh et al, 2004: University of Ottawa and Ontario Ministry of Health, 2009)

The next section considers how different theories can illuminate factors which can influence the process of promoting best practice.

1.6 Theoretical insights

“Human health-related behaviour is the consequence of multiple influences from biology, the environment, education and culture” (Whitby et al, 2007: 3). It is generally accepted that behavioural determinants can be subject to change (Whitby et al, 2007). In order to try and understand behaviour change, drawing on more than one theoretical perspective is useful (Robertson & Jochelson, 2006). Learning theories advocate the use of incentives, audit and feedback (Robertson & Jochelson, 2006). As Pittet (2004:1) states, “improving practices frequently implies modifying healthcare workers’ behaviour”. Therefore, social cognition theories focus on determinants of behaviour (Whitby et al, 2007), and suggest the use of interventions which will impact on individual beliefs (Robertson & Jochelson, 2006). Change theories suggest the tailoring of interventions to individual need (Robertson & Jochelson, 2006). However, interventions aimed at changing behaviour have not always been clearly articulated (Aboelela et al, 2006). Blackwood (2006: 612)

believes that interventions that are aimed towards changing behaviour in healthcare practice are difficult to standardise because they may contain some or all of these parts:

“practitioner behaviours, such as the investigations and assessments they undertake, their expertise and skills, guidelines, protocols and educational materials they use, parameters of behaviour, such as the frequency and timing of behaviours and methods of organizing and delivering those behaviours, such as the number and types of practitioners involved, technologies available, the particular setting, location and organizational culture”.

For this study, it was important to consider the main triggers to improving infection control practices, and consider what determines behaviour change. Grol and Grimshaw (2003) illustrate the range of theories which can illuminate some of the reasons that influence the promotion of best practice. Cognitive theories show how lack of knowledge or education can influence individuals' behaviour. Adult learning theories postulate the impact of experience on individuals' motivation to change behaviour or practice (Grol & Grimshaw, 2003). Social cognition theories can help to understand individual determinants of change which in turn illuminates the role of individual intention and behaviour in healthcare practice (Godin & Belanger-Gravel et al, 2008). Behavioural theories suggest that modelling, feedback, use of incentives and reinforcement can influence individual behaviour (Grol & Grimshaw, 2003). Organisational models of change help to understand some of the complexities within organisations, and what barriers to change exist (Robertson & Jochelson, 2006). However, economic, political, and organisational contexts should be considered when seeking the successful strategies for changing behaviour or practice in different settings (Grol & Grimshaw, 2003).

1.7 Interventions designed to change behaviour or practice

According to Wallin (2008), gaps exist to explain the success or failure of interventions designed to promote best practice. The process of embedding evidence based practice is often hampered by barriers which exist at both individual and organisational levels (Robertson & Jochelson, 2006). However, randomised trials of

knowledge translation strategies that influence behaviour change do not always consider what may be the causal mechanisms of the change (Ramsey et al, 2010). In healthcare, there is lack of consistency to show which interventions are most effective to improve practice, and lack of evidence to support the potential benefits of certain interventions (Robertson & Jochelson, 2006). Interventions which have been examined include education, reminders, audit, feedback, outreach visits, and the use of the media (Robertson & Jochelson, 2006). Educational materials, patient-mediated interventions, audit, feedback, reminders, local opinion leaders have been cited as a range of interventions which can be effective to change behaviours if used under the appropriate conditions (Oxman et al, 1995). Educational meetings and opinion leader used together were found to be effective in increasing the use of research in nursing (Thompson et al, 2006). Whatever the nature of successful interventions, embedding change in practice is more likely, “if organisational and national level strategies support individual interventions and create a facilitating framework for change” (Robertson & Jochelson, 2006: 29). This point alludes to the significance of context and how factors can influence individual level interventions.

1.8 Rationale for positioning the study within infection prevention and control

In infection prevention and control practice, strategies which are known to be effective are already in existence (Larson, 2005), and that procedures be evidence-based is generally agreed (Sax et al, 2013). Storr et al (2013) suggest that, in infection prevention and control, education, audit, using guidance and feedback have been used in efforts to promote best practice and reduce the risk of HCAs. However, embedding evidence based practice is often contingent on organisational or individual factors which have the power to influence this process. Between 15-30% of healthcare associated infections (HCAs) are considered preventable (Grol & Grimshaw, 2003), but there is recognition of non-compliance and non-adherence with guidance and standards by healthcare staff (Grol & Grimshaw, 2003: Watkins et al, 2006: Ward, 2010: Ward, 2012). There is currently a paucity of studies which have considered how different intermediaries can be successful in embedding best practice in infection control, and understand the factors which enable or hinder their potential impact.

1.9 Healthcare Associated Infections (HCAIs)

A healthcare associated infection (HCAI) is defined as an infection; “that occurs as a result of contact with the healthcare system in its widest sense –from care provided in the home, to general practice, nursing home care and care in acute hospitals” (Welsh Government, 2011b). The term HCAI is now used most commonly, as opposed to hospital acquired or nosocomial infections, to reflect the diversity of current settings in which people receive care. The term also reflects the challenges that exist in actually pinpointing the exact source of infection (Motacki et al, 2011). According to the House of Commons (2008:7), HCAIs; “arise from micro-organisms that people carry safely on their skin or in their body, and only become a problem when the organisms have an opportunity to breach the body’s natural defences as a result, for example, an open wound, catheterisation or intravenous devices”. In the case of a vulnerable patient, every known micro-organism has the potential to lead to illness (Motacki et al, 2011). Murphy and Whiting (2007:3) state that HCAIs are a detrimental “by product of healthcare”, citing, as the root of the problem, challenges such as the provision of intensive treatments for an ageing population already with increasing complex healthcare needs.

1.9.1 The extent of the problem

Healthcare associated infections (HCAIs) are known to be the “most frequent harmful event in healthcare delivery” (WHO, 2011a), and general estimates of their harm has recently been updated by the World Health Organisation, outlining the gravity of the situation, so that “of every hundred hospitalised patients at any given time, seven and ten of them will acquire an HCAI in developed and developing countries respectively” (WHO, 2011b: 22). In the United Kingdom, government policy advocates that people take individual responsibility to prevent HCAIs, so that it becomes “everybody’s business” (DoH, 2010b). From a public health perspective, the clear message is that healthcare associated infections can affect healthy people of all ages and in different settings (NICE, 2012). The current policy mantra reflects the high level of public concern (Millar, 2012), and strongly advocates a “zero tolerance”, or no tolerance approach (WG, 2011a: NICE, 2012: Millar, 2012). However, despite massive investment in policy and education for healthcare staff and the public, understanding the impact of the investment on people’s behaviour or

practice is often unclear (Wilcox, 2009). The other factor that compounds these problems is that HCAs are not prioritised by healthcare staff in the same way as other ‘harmful’ events (Gardam et al, 2009). In general, there is tension between policy and practice, especially around the “lack of strength of the evidence supporting interventions to prevent HAIs; the degree of ownership that healthcare workers feel for the problem and the perceived level of intractability of the problem” (Gardam et al, 2009:13).

1.9.2 The policy context

From the domain of policy across the United Kingdom, several key documents produced in the early 90s reflected the concerns which prevailed at the time around the lack of attention being paid to the control of infections (NAO, 2000; DoH, 2002). One key example was the launch of the Matron role in 2001, instigated as a response to the NHS Plan consultation, and which signified policy intent to strengthen clinical leadership at ward level (Department of Health, 2001). ‘Winning Ways’ (DoH, 2003) was a pivotal document which signified the changes that were required in order to bring infection prevention and control to the forefront of healthcare practice. ‘Winning Ways’ outlined the requirement to focus attention on promoting the recognisable success factors such as effective leadership, better communication and information, and the implementation of preventative measures. This document reflected the general policy activity that was going on at the time in terms of developing strategies and working groups, collectively spelling out serious concerns about the low profile of infections and infectious diseases. The other noticeable factor in this new approach of proactivity in eradicating infections was the launch of a new strategy, whereby HCAs would be used as indicators of quality and safety for patient care. The use of HCAs as indicators would become instrumental in the healthcare policy of different governments in the following years.

In 2006, the Hygiene Code within the Health Act set out the statutory duties of all healthcare organisations, with failures being open to redress through the powers of the commissioning bodies (Healthcare Commission, 2007). In England, Saving Lives (Department of Health, 2007b) set out the legal requirements of healthcare providers to ensure adherence to the Code which stated that “effective prevention and control of HCAI has to be embedded into everyday practice and applied

consistently to everyone” (Department of Health, 2006:1). The Health and Social Care Act (DoH, 2008a) and the introduction of the Care Quality Commission (2009) have further ensured that infection control measures are now prioritised by all healthcare organisations (Flanagan, 2009). Guidance for NHS Trusts in England, produced by the Department of Health in 2008, focused attention on four key measures, namely people, processes, practices and performance, and summarised the development of the measures (DoH, 2008b). For each of the four key areas, outcomes were set to focus attention on continuing to improve infection prevention and control in practice.

To summarise the recent policy activity, a potentially dire situation around 2004, when HCAs were perceived as an “intractable problem” (Department of Health, 2009:4) has since been improved, as exemplified by falling rates of Meticillin Resistant Staphylococcus Aureus and C.Difficile infections (Department of Health, 2009). However, the importance of sustaining efforts by healthcare organisations in order to consistently reduce the risks of HCAs are reflected in the constant stream of guidance and strategies, produced in the last decade, which collectively demonstrate the concern of governments, policy-makers and patient representatives. Currently, infection prevention and control is firmly ingrained within the quality agenda of healthcare organisations. ‘Liberating the NHS’, the vision for the NHS launched in 2010, reinstated the government’s commitment to continue to improve patient safety (DoH, 2010a). The mantra of today’s policy agenda is that infection prevention and control is everyone’s responsibility and a priority for all concerned with healthcare provision (DoH, 2008b; Motacki et al, 2011). Policy-makers advocate that people, including patients, take individual responsibility in the prevention of HCAs, with the focus being firmly placed on ensuring safety and quality.

Whilst recognising that not all HCAs are avoidable (Donaldson & Beasley, 2007), there is general agreement that a number of them are preventable (WAG, 2004). To reflect the global approach that strives for zero preventable infections (Murphy & Whiting, 2007), UK government policy and guidance advocate a “zero tolerance” approach to the problem of healthcare associated infections (WAG, 2004: APIC, 2008: WG, 2011b). Whilst this approach is arguably idealistic and unachievable, it does, however, serve a specific purpose, presenting a ‘substantial opportunity for

hospital leaders to improve safety, quality and significantly reduce cost' (Murphy & Whiting, 2007: 4). However, the success of any form of policy is contingent on several factors, including perception of its relevance, readability and harmony with its development and use (Coleman & Nicholl, 2001). According to Coleman and Nicholl (2001: 229), "the extent to which any published source of guidance in isolation is likely to affect policy and clinical practice is limited, but this is not to say that guidance is not "valued" by the health professionals for whom it is provided, or that it does not contribute in some way to shaping attitudes or influencing behaviour". This study was interested in finding out the influence of the current infection control policy context on how different intermediaries are able to promote best practice.

1.9.3 Current national guidelines

Currently, in the United Kingdom, national multi professional guidelines are being increasingly used to focus attention on the patient safety risks that are presented by HCAs (Pratt et al, 2007). The current national guidelines (originally produced in 2001, under the patronage of the National Institute for Health and Clinical Excellence (NICE) and termed the 'Epic' guidelines), were revised in 2007, under the title 'Epic2' (Pratt et al, 2007). The Epic guidelines are organised around three key areas of infection prevention and control. These measures reflect the factors known to influence the implementation of evidence based practice as discussed earlier, and are listed as standard precautions, prevention of infections associated with indwelling urethral catheters, and prevention of infections associated with the use of central venous access devices. The evidence to support the implementation of the Epic guidelines were based on "multiple systematic reviews of experimental and non-experimental research and expert opinion as reflected in systematically identified professional, national and international guidelines, which were formally assessed by a validated appraisal process" (Pratt et al, 2007:S1).

1.9.4 Patient safety and infection control

Patient safety is currently described as the 'cornerstone' of healthcare, and prevention of HCAs remains one key priority within the patient safety sphere (NICE, 2012: Storr et al, 2013). According to NICE (2012: 8), "patients have the

right to expect that those who provide their care meet appropriate standards of hygiene and follow the correct procedures to minimise the risk of healthcare-associated infection". National campaigns have been instrumental in providing examples of improvements in patient safety in healthcare (DoH, 2007b: 1000 Lives Plus, 2013), striving for change in areas where harm can be avoided, including the reduction of HCAs, with strategic objectives to be met through national standards, availability of specialist support, training, staff accountability, and the placing of infection control firmly within the management agenda (WAG, 2004). National governments' commitment to eliminating HCAs currently heralds a change of strategy from focusing on controlling and reducing infections to a directed campaign to eliminating HCAs (WG, 2011b). There is also a small but growing interest in patient focused interventions in infection prevention and control, boosted by a recognition that patients can do much to contribute to their own safety in healthcare. In its embryonic state, there is currently little evidence to substantiate the level of impact of patient focused interventions, and the evidence base to support effectiveness is limited to a small number of studies and a single systematic review (Coulter & Ellins, 2006).

It is no surprise that, as the current description of HCAs as a frequent and harmful event suggests, their prevention and eradication is by now a global priority (Ward, 2012). The cost of infections is potentially avoidable (Millar, 2012). However, the consequences of HCAs, once developed, are recognised as being expensive. For patients, these can include heightened antibiotic-resistant organisms, longer hospital stays and more surgical procedures, an increased risk of disability, and even death (World Health Organisation, 2011c: Boscart et al, 2012). Consequences from HCAs are often difficult to compensate for (Miller, 2012). Figures obtained by the World Health Organisation (WHO) estimate that HCAs contribute to around 37,000 deaths in Europe alone, and up to 99,000 deaths in the United States (WHO, 2011c). HCAs continue to be an unacceptable financial burden to the NHS in the United Kingdom as well. Total costs derived from treating infections have been estimated at around a billion pounds per annum (National Audit Office, 2009: Ward, 2010).

According to the Department of Health (2003:7), "no single factor explains the growth in the number of patients who acquire infections during the course of their

treatment and care by the NHS or other healthcare systems around the world”. However, there is current recognition of a range of contributing factors, which are normally discussed in terms of their relationship to patients, or to the organisation. In the United Kingdom, to highlight the severity of the problem, documents which summarise the factors known to increase the risk of HCAs have been regularly launched into the public domain in recent years (Department of Health, 2003: Healthcare Commission, 2007: Department of Health, 2007a: Royal College of Nursing, 2012a). Patient related factors include the increase in patient numbers requiring healthcare interventions, together with extending length of stay in hospital and the risks associated with weakened immunity. Therapeutic factors include the general increase in use of indwelling devices, for example, catheters and central lines in recent healthcare systems. From the organisation of healthcare services, organisational factors influencing the rates of risk include high bed occupancy (Millar, 2012), which hinders the cleaning process in between patients, and increases in the rates of direct and indirect contact between individuals in hospitals. Further, organisational factors are also known to influence the promotion of best practice, for example, leadership and extent of managerial support, the extent of public reporting, the design of buildings, team stability, morale, workload and staffing (Gardam et al, 2009: Griffiths et al, 2009: Millar, 2012). Structural factors include the adequacy of isolation rooms in hospitals, and the number of single rooms with own hand basins (Department of Health, 2007a). For healthcare settings, increased movements of patients, for example, through ward transfers, and less than satisfactory rates of staffing are also considered significant factors. Environmental factors have also been identified relate to hospitals, especially around cleanliness, and to the nature of specific hospitals (for example, number of specialist units). Storr et al (2013: 5) use the phrase “perfect storm” to highlight how different contributing factors collide in the complexity of current healthcare environments, and how risk of HCAs remain real for many patients.

1.9.5 Individual factors

Whilst it is acknowledged that healthcare staff can contribute to the chain of causality resulting in patients acquiring HCAs, establishing the individual’s exact responsibility can be difficult as causality and infection episode are often set apart

(Millar, 2012). Healthcare staff compliance with precautions, for example hand hygiene, is often cited as a behavioural factor which can influence the rates of healthcare-associated infections (DoH, 2003). Issues which can influence compliance have been explored in the past, and relate to gaps in knowledge (Sax et al, 2005), or lack of availability of effective leadership or role model (Harris et al, 2000; Chan et al, 2002). Understanding the behaviour of individuals in infection prevention and control is explored further in this chapter, as it relates to study's field of enquiry. Individual factors which have been cited as influential include individuals' compliance with guidance and policy, social pressures, the impact of role modelling, and positive deviance (Gardam et al, 2009). However, despite some recognition of the types of factors which influence practice, managing infection prevention and control in any complex healthcare environment is still highly challenging. Whilst healthcare policy directs individuals at all levels to assume individual responsibility and contribute towards the prevention and control of HCAs, factors which can influence individuals' behaviour, and which control organisational ways of working, cannot be dismissed. It is important, therefore, to find ways in which best practice can be promoted within the resources that are available. Finding ways to ensure best practice is promoted must also include advancing general understanding of context, as this represents the reality of contemporary healthcare practice.

To summarise this section, a range of factors which are recognised nationally provide a degree of understanding as to why infection rates are currently unacceptable, and illuminate the enormity of the challenge that the global community faces in the drive to eradicate HCAs. However, the grouping of risk factors that include behavioural drivers illuminate the potential to promote best practice through ensuring adherence with precautions and implementation of evidence based interventions.

1.10 Determinants of behaviour change in infection control

In infection prevention and control, reducing the rates of HCAs require efforts that focus on improving behaviour as well as providing strategies for practice (Huis et al, 2011). However, there is currently a lack of understanding about how individuals' practices can be modified (Pittet, 2004). A systematic review of literature looked at

the impact of bundled behavioural interventions for healthcare associated infection control (Aboelala et al, 2006). The interventions that demonstrated most impact on influencing the behaviours of staff, and contributing to successful outcomes relating to reduced rates of infections, included education, the development of quality improvement teams, compliance monitoring, feedback, and hand washing mandate (Aboelala et al, 2006). However, because of the use of bundling within interventions, it was difficult for the authors to ascertain the exact contribution of each intervention to successful outcomes. Further, there is an acknowledgment that single interventions in themselves do not always lead to change. Education, for example, does not automatically lead to behaviour change, but must be provided in specific ways which encourage behaviours to be changed or modified (Pittet, 2004).

1.10.1 Using the case of hand hygiene as an example

In a scope of the infection prevention and control literature which explores ways in which behaviours and practice can be changed, the majority of studies focus on hand hygiene, as opposed to broader strategies which are designed to reduce the risk of HCAs. Hand hygiene is representative of the challenges to maintain individual compliance, and where changing individuals' behaviours and practice is recognised to be problematic (O'Boyle et al, 2001: Whitby et al, 2007: Wisniewski et al, 2007: Boscart et al, 2012). From the plethora of studies focused on hand hygiene, some key messages have emerged about factors which can impede hand hygiene practices. For example, Gould et al (2007) in a Cochrane review of interventions to improve hand hygiene compliance found that organisational factors, for example, staffing levels, can impact on compliance. O'Boyle et al (2001) cite individual knowledge and structural factors such as availability of supplies as being most influential.

Current literature lacks clear guidance and solutions for hand hygiene (Huis et al, 2011). The current evidence has generally recommended that multifaceted interventions are best placed to improve compliance with infection control practices. For example, for hand hygiene, Naikoba and Hayward (2001) found the impact of multifaceted interventions greater than single interventions. However, Gould et al (2007) report that more recently, these earlier findings have been disputed (Grimshaw et al, 2004: Jamtvedt, 2006), and that impact from using multifaceted intervention as opposed to focusing on a single intervention is not likely to be higher.

Further, Gould et al (2007)'s review found that the use of single interventions, for example, education, are not robustly supported in the literature. However, single or multifaceted interventions are less likely to succeed if the contextual conditions which impinge on individuals' practice are not understood. For infection prevention and control, behaviour or practice change is reliant on addressing the organisational environment as well as individual determinants (Kretzer and Larson, 1998). As O'Boyle et al (2001: 358) write, "a theoretical perspective on HCW hand hygiene behaviour must be expanded from a focus on the individual to a focus on the individual in situational context".

1.11 The gap between evidence and practice

It is not clear how different intermediaries can be most effective to promote best practice in the context of infection prevention and control. Whilst the policy base informs clinicians what should be done to reduce the risks of healthcare associated infections, the gaps between policy and practice remain unresolved. Contextual factors are known to influence the success or failure of best practice interventions but are often not detailed in the existing literature (Sax et al, 2013). In particular, triggers that can modify and or change individual behaviour in infection control warrant further exploration. According to Pittet (2004:1), "changing behaviour and shifting social norms at multiple levels through the HCW community are among the key challenges of infection control today".

1.12 Rationale for the study

Thus far, the backdrop to the study has been presented. This study has been designed to elicit a better understanding of the concept of the intermediary in promoting best practice, and to understand the contextual conditions that may facilitate or hinder their success. Factors which are known to influence the implementation of best practice in healthcare have been outlined, but important gaps exist to show where the exact contribution of different intermediaries can be most effective. These factors provided the rationale for deciding to situate this study in the domain of infection prevention and control, to show how intermediaries could contribute most effectively to changing the behaviours or practice of others. The study was also intent on illuminating the components of intermediary programmes within the domain of

infection prevention and control which explain the factors which contribute to successful ways of promoting best practice. The problem of HCAs, and the factors which are considered to influence the success of different interventions which aim to improve infection prevention and control practice have been presented. One area which has received little attention is the potential contribution of different intermediaries in promoting best practice in infection control, and how they can modify behaviours and change the practice of individuals. The next section introduces the methodological approach chosen for this study.

1.13 The realist evaluation approach

The study is a realist evaluation which aims to explain what works for whom in what circumstances (Pawson, 2006; Pawson, 2013). More recently, the slogan which defines realist evaluation has been broadened to include, “what is it about a programme that works for whom, in what circumstances, in what respects, over which duration” (Pawson, 2013: 15). Initially developed as programme theories, context –mechanism-outcome propositions are followed up by testing and refining with study participants (Tilley, 2000). This approach was chosen to understand the contexts and specific actions which show the potential contribution of intermediaries to promoting best practice. The realist review of the evidence was undertaken to ‘reconstruct’ the programme theories (Pawson, 2013: 161). The study used stakeholder involvement to show the perspectives of a group of individuals with a vested interest in infection prevention and control, and identify the important components within healthcare practice which can influence the success or failure of intermediaries to promote best practice. The case study design was chosen to develop the programme theories and test and refine the propositions. Complex social interventions are programmes which provide some form of resource which, “require a reasoned response of the participants to that resource” (Hewitt et al, 2012: 250). Human reasoning and actions (on the part of the recipient and those delivering the interventions) are the significant factor in realist studies, and are the elements that constitute success (Hewitt et al, 2012: 251).

1.14 Study aim and objectives

Study aim: to evaluate the role of intermediaries in promoting best practice in infection prevention and control: to determine what works, for whom, how, in what respects, and in which circumstances.

1.14.1 Study objectives:

- To identify intermediary mechanisms and understand the ways in which different intermediaries are successful in promoting best practice
- To understand the context within which intermediaries operate
- To develop programme theories which show the relationship between specific intermediary mechanisms and contexts, and how this leads to changed behaviours or practice (outcomes)

1.15 Thesis Overview

Chapter 1 has provided the background to the study and the importance of advancing knowledge around ways in which the intermediary could potentially promote best practice in healthcare. The potential of the intermediary to contribute to the gaps in implementing best practice at the frontline of patient care has been presented, particularly to show how the study can contribute to the quality and safety agenda. The problem of HCAs and the policy context around infection prevention and control have been discussed. The study's aims and objectives have been set out, and the methodological approach chosen has been briefly presented. The concept of the intermediary is currently under explored, and the importance of developing more robust evidence to show what works in the healthcare domain cannot be overestimated.

Chapter 2. The methodological approach employed for this study is presented. The epistemology and ontology underpinning the thesis are discussed, and justification of choosing the realist approach is provided. The chapter provides a précis of the theoretical underpinnings of the realist approach. Realist evaluation is explored in depth, and the applicability of this approach for the study is presented, whilst consideration is also given to potentially alternative approaches.

Chapter 3. This chapter is a report of the realist review of the evidence. The aim of this chapter is to present the evidence which show the promise of the intermediary in promoting best practice, drawing together evidence from different sources to develop a hypothetical programme theory.

Chapter 4. This chapter is a report of the research methods chosen for the case studies, on the basis of their suitability for the study's aims and objectives, and their fit with the realist evaluation approach. Data collection methods are discussed, and the processes undertaken for both case study one and two are outlined.

Chapter 5. This chapter is a report of the findings from the two case studies. Case study one was a mixed methods case study designed to develop a set of CMO propositions. The case study was undertaken within one NHS Trust in England, which included a clinically embedded intermediary programme as part of the infection control strategy. Case study two comprised of a second mixed methods case study conducted within one NHS Health Board in Wales, where the infection control strategy employed a more distributed approach to different intermediaries. The intention of this case study was to build on and refine the context-mechanism-outcome propositions which were developed in case one.

Chapter 6 is the discussion chapter which consider the main findings from the study when compared against existing evidence. Emergent findings are considered in view of broader theory, and the aims and objectives of the study are revisited. The revised programme theories are presented to show the study's contribution to show ways in which different intermediaries can be successful to promote best practice.

Chapter 7. This final chapter concludes the thesis. The implications of the new findings for practice, policy and research are presented, and recommendations for future practice are suggested. The suitability of realist evaluation as the methodological approach for this study is analysed. The limitations of the study are outlined. A section on reflexivity is included in this chapter to show how the researcher's thinking and learning evolved throughout the whole study, PhD process and studentship.

1.16 Conclusion

To summarise, this thesis is a report of a realist evaluation of intermediaries in infection prevention and control, what works, how, in what capacity and under which conditions. The study provides a new contribution to what is already known about this phenomenon. The realist evaluation approach was chosen for this study to develop and test context-mechanism-outcome propositions to show what works. Case study design was chosen to develop, test and refine the CMO propositions. Choosing realist evaluation was important to seek the ways in which intermediaries can promote best practice, whilst being cognisant of the importance of context. The thesis also advances understanding of the use of realist evaluation as the methodological approach.

In this first chapter, the intention was to set the scene, and orientate the reader as to the location of the contents of the thesis. The current problem of HCAIs, and their potential consequences for patients and practice have been outlined. The challenges of promoting best practice have been presented, based on current understanding of both organisational and individual factors. Attention has been drawn to the challenges of getting individuals to modify or change their behaviours and practices in the infection prevention and control domain. Infection prevention and control lacks sound evidence that demonstrates the potential impact of the intermediary to promoting best practice. The study's rationale, aims and objectives have been presented. Increasingly, there are calls for research to show how specific interventions, which have the potential to be successful in embedding best practice within complex healthcare systems work. This thesis is presented as an attempt to bridge this gap.

CHAPTER 2:

The methodological approach

2.1 Introduction

The epistemological and ontological positions of the study are affirmed in this chapter, to explain the theoretical underpinnings which shaped the study's design (Wilson & McCormack, 2006). As established in chapter one, the intermediary's potential contribution to promoting best practice is currently not well understood, especially the mechanisms which may lead to changes in behaviour or practice. Further, the importance of understanding the contextual conditions which can influence the success or failure of different interventions was highlighted. This chapter will provide the reasoning behind choosing a theory-driven evaluation approach through exploring the positivist, constructivist and realist paradigms, and being mindful of other approaches which could have been used. The argument for the suitability of the critical realist perspective to frame this study will be presented. Finally, the tenets of the realist evaluation methodological framework will be explored, and a case made for its appropriateness to address the study's aims and objectives.

2.2 Methodological approach

Understanding what knowledge means for different disciplines is a long-standing philosophical challenge (Perla & Parry, 2010), thus the start of the chapter provides a brief exploration of the nature of knowledge. The methodological approach refers to 'how researchers go about finding out whatever it is they think can be known' (Norton, 1999:32). Thus far, the scarcity of evidence to illuminate the core concepts of the intermediary, to explain how different intermediaries might contribute to the promotion of best practice, has been briefly outlined. It was important to choose an approach which would best illuminate the study objectives, so that intermediary mechanisms could be identified, and ways in which different intermediaries influence practice could be understood within certain contextual conditions. It was crucial to choose an approach which could support the development of a programme theory which proposes how the relationship between specific intermediary actions

(mechanisms) and conditions (contexts) lead to changed behaviours or practice (outcomes), and which could provide a framework to test and refine the initial programme theory through empirical data.

2.3 Positivism

On a virtual continuum of knowledge paradigms, positivism has traditionally been placed at one end. From this perspective, a positivist would describe science as ‘the methodical observation of phenomena which enables the observer to identify the causal relationships that exist between those phenomena’ (Porter, 2001:15). The epistemology is based on a belief that causality is directly related to effect. Positivists argue that one reality exists, and that the purpose of research is to provide measurable accounts of this reality (Oltmann & Boughey, 2011). For a positivist, scientific knowledge alone can provide the answers to questions around the behavioural sciences (Harre & Secord, 1972), and closed systems ‘allow constant conjunctions of events, the Human version of causality’ (Mingers, 2011:314). Initially emerging in the natural sciences, the mid-eighteenth century found sociologists starting to transcend positivist beliefs to the study of social science, in the hope that complex phenomena in the social sciences could be understood through scientific means (Parahoo, 2006).

Explaining positivism is challenging as many different interpretations exist (Sayer, 1992; Kazi, 2003). For example, some positivists understand social situations based on the belief of a reality outside our perception (Polit & Beck, 2009). What positivists have in common is the goal of generalisation (Lincoln & Guba, 2000). But because the positivist approach to natural and social sciences operates within closed systems, it fails to demonstrate generalizability (Bhaskar, 1979). For Bhaskar, positivism commits the ‘epistemic fallacy’ of attempting to fit ontological questions around the nature of reality to epistemological questions around knowing what reality is (Cruickshank, 2011: 7). On the other end of the virtual continuum, philosophers, or in the words of Bhaskar; ‘humanists, hermeneuticists and other anti-naturalists, jointly comprising the anti-scientific romantic reaction’ (1979:160), have striven for some time to find different ways to exploring phenomena as they occur within the social world. Within the interpretivist perspective, where the focus of

research is to uncover the meaning of experience (Topping, 2010), lies constructivism.

2.4 Constructivism

From the interpretivist domain, Kazi (2000) explains constructivism as a way of viewing reality as being all in the mind, with language, narrative and discourse offering different perspectives of that reality. For Kazi (2003: 13), constructivists believe that 'there is no reality which can be used as a standard, and that there are therefore many truths which are all equally true even if they are contradictory'. For Alkin and Christie (2004: 42), a constructivist approach to research and enquiry focuses on the stakeholder perspective, where 'instead of there being one reality, there are multiple realities based on the perceptions and interpretations of individuals in the program to be evaluated'. Reality is 'socially constructed' (Bergin et al, 2008: 171) and specific to the circumstance. For constructivists, the enquiry focuses on what 'individuals perceive to exist' (Wainwright, 1997: 1264). Stake (1995:100) writes that 'infants, children and adults construct their understanding from experience and from being told what the world is, not by discovering it whirling there untouched by experience'.

Constructivists reject the notion that knowledge of the human and social world can be explained through positivist approaches (Bhaskar, 1979). Critics of constructivism point to it lacking the depth of other approaches in understanding 'constraining and enabling social structures and mechanisms' (Wainwright, 1997:1268). Bhaskar writes of a linguistic fallacy, which reduces the ontology of being to narrative and discourse (Bergin et al, 2008). However, there are other forms of constructivism which edge a little nearer to the positivist stance on the virtual continuum. For example, Stake (1995:101) believes that the majority of researchers adopt a pragmatic 'rationalist-constructivist' perspective to the world we live in, because to do otherwise would be to believe in a reality based on illusion.

The rationalist-constructivist stance does not sit comfortably with the positivist seeking the absolute 'truth' (Parahoo, 2006), thus philosophers have sought a middle ground. From a post-positivist approach it is more meaningful, according to Bhaskar, to be able to describe phenomena in an understandable way, rather than seek the 'absolute truth' (Wilson & McCormack, 2006: 46). For this study (where a

more meaningful exploration was sought that show how different intermediaries can be successful to promote best practice), the constructivist approach would not address the specific aims and objectives to seek contexts and mechanisms enabling or hindering the programmes or interventions. However, realism, stemming from an alternative epistemological and ontological perspective, recognises that the; 'patterning of social activities are brought about by the underlying mechanisms constituted by people's reasoning and the resources they are able to summon in a particular context' (Pawson & Tilley, 1997: 220).

2.5 Realism

Realism offers an alternative position that neither rejects nor endorses the different stances offered by the traditional positivist and constructivist paradigms (Pawson & Tilley, 1997: Julnes et al, 1998). Pawson and Tilley (1997:55) write that realism 'has sought to position itself as a model of scientific explanation which avoids the traditional epistemological poles of positivism and relativism'. Outhwaite (1987: 18) explains that one benefit of realism is being able 'to shift the emphasis back from epistemology, the theory of knowledge, to ontology'. The realist ontology relies on a belief that the features which form our world cannot be seen or observed (Wainwright, 1997). As Bhaskar (1989) contends, all ways of organising knowledge (including philosophy), believe in advance in some form of realism, a way of understanding and explaining the nature of being or existing (ontology).

The idea of a real world existing independently of our understanding of it can be difficult to grasp. Westrop et al (2011:3) offer another perspective, referring to interdependency. In essence, this means that 'how we interpret it (*the real world*) influences our actions, which in turn can influence reality'. For Wilson and McCormack (2006: 48), a realist enquiry takes place; 'within a complex open system that is synonymous with social systems'. In other words, a realist perspective relies on a belief that the world is made up of a plethora of different systems, for example, social, material, or psychological (Westrop et al, 2011). In open systems, there is fluid movement between constituents of different systems (Westrop et al, 2011). Therefore, to truly embrace the realist paradigm, one needs to be convinced that theoretical constructs really exist. In other words, one must be convinced in their

belief that; ‘protons, photons, fields of force, and black holes are as real as toe-nails, turbines, eddies in the stream and volcanoes’ (Hacking, 1983:21).

Realism denotes the importance of explaining behaviours, such as the relationships between structures and values (Porter, 2001). In essence, realism rejects the universal law convictions by opening up the world and offering a layered perspective to explain ‘relations of natural necessity rather than the relations of logical necessity’ (Wainwright, 1997:1265). However, as Wilson and McCormack (2006) explain, it is not enough to prove that interventions lead to specific outcomes. The realist researcher would seek to understand the reason for the outcomes. For Bhaskar (1989) the pivotal question centres on the kind of realism that shapes people’s beliefs. Julnes et al (1998:488) are also concerned with clarity, highlighting that; ‘those interested in realism as a foundation for evaluation need to consider what sort of realism appears most appropriate’.

2.6 Scientific realism

Contrasting with positivist and constructivist approaches, scientific realism ‘offers a cyclical evaluation that attempts to link knowledge with reality’ (Kazi, 2000:13). For Kazi (2000), scientific realism focuses on the structures, mechanisms and outcomes of a phenomenon, eliciting what works and what does not work, within an open system where a multitude of different mechanisms can exist. This process enables the discovery of different mechanisms (which can be either enabling or disabling) based on the findings of the evaluation process. As with other philosophical beliefs, several different versions of scientific realism exist (Julnes et al, 1998). Scientific realism is more rigorously closer to empiricism (Julnes & Mark, 1998), and illuminates the progression of knowledge.

A distinction between the natural and social world is necessary at this point. For Scambler (2002) the dilemma is if a natural world exists outside people’s perceptions of it, how can the social world claim the same, if people are not within it? Realist philosophers argue that the focus on uncovering causal mechanisms can be applied to the human sciences, based on an understanding of the interdependence of individuals and society (Wainwright, 1997). As Bhaskar (1989:3) explains ‘social phenomena (like most natural phenomena) are the product of a plurality of structures’. Kazi (2001:4) explains the point thus; ‘programme outcomes associated

with human services are the result of complex transactions of many different kinds of structures at many different levels and cannot be explained simply in terms of a causal link between events at the surface’.

For this study, with its aim of advancing new knowledge to contribute to current understanding about the intermediary, an approach that exposes the structures in play within complex social situations was essential, as the study’s focus was on the uncovering of human structures and mechanisms. Therefore, ‘critical’ realism was chosen as the study’s methodology.

2.7 Critical realism

Previously known by terms such as fallibilistic realism and post-positivism (Kazi, 2000), critical realism has emerged as an alternative scientific approach to positivism and relativism (Pawson & Tilley, 1997). Critical realism is heavily influenced by the work of philosophers such as Harre and Bhaskar (McEvoy & Richards, 2003), and is based on the realist perspective which challenges the belief that what we know about the world is real (Oltmann & Boughey, 2011). For critical realism, the mechanisms (or structures) that lead to observable phenomena are the focus of knowledge (Wand et al, 2010). In the 1970s, at around the same time as different approaches to systems thinking were developing (Mingers, 2011), critical realism began to challenge the positivist conviction that only the observable could be associated with reality (Spencer, 1995). For critical realists, reality exists outside any description of it, and learning about reality is confined to the here and now (Stickley, 2006). In other words, critical realism focuses on analysing the social world (Wand et al, 2010).

Critical realism claims that it is necessary to know the real world as well as the nature of the real world, rendering it both an epistemology and ontology (Oltmann & Boughey, 2011). However, Yeung (1997: 54) cautions against referring to critical realism as an epistemology, which can imply that the approach is seeking ‘an ‘ultimate’ truth or theory’. However, critical realism does not claim to do as much. Whilst the transitive world is contingent on our knowledge of the world (Oltmann & Boughey, 2011), intransitive objects are described as ‘the objects of science’ (Stickley, 2006:572). In critical realism, an intransitive world does not change much in people’s consciousness, and is independent of our knowledge of it (Oltmann & Boughey, 2011). From a critical realist perspective, these beliefs allow for the

development of theories of these structures and processes which can then be tested (McEvoy & Richards, 2006), and then changed or developed accordingly.

For Bhaskar (1989: 2) critical realists 'hold that we will only be able to understand and so change the social world if we identify the structures at work that generate those events or discourses'. Bhaskar's work is interpreted as being closely aligned to Marxism (Spencer, 1995), especially the structural form of Marxism. Keat and Urry (1982) believed Marx to have been both realist and naturalist, through his conviction that society's features can be explained by their relation to underlying structures. However, explaining structure is not enough, according to Cruickshank (2011), which reinforces the purpose of critical realism to uncover causal mechanisms and understand how they can be triggered (Wilson & McCormack, 2006). This point resonated with the aims and objectives of this study. In essence, it is the interaction of enabling or disabling mechanisms that hold the power to any outcome that we are able to observe (Byng et al, 2005), which explains this form of realism is described as 'critical'. However, it is important here to note that, for the realist (as opposed to the positivist) researcher, causal laws are *tendencies*, not absolutes (Outhwaite, 1987; Bhaskar, 1979).

According to Syed et al (2009: 8), the purpose of science is to explain the empirical observations 'in terms of underlying generative mechanisms and structures'. Generative mechanisms refer to the 'structures, powers and relations that explain how a programme or intervention works beneath the surface' (Wand et al, 2010: 233). Bhaskar's (1975) tenets of critical realism are based on explaining the world in three domains. Explanation of the different domains are enlightening by differentiating between the real world, where generative powers of objects/agents exist (Wand et al, 2010), the actual world which is most likely observed and where powers can be activated or not, and the empirical world (what can be observed or experienced through science or perceptions (Kontos & Poland, 2009: Wand et al, 2010). The three domains are separate and rely on different factors to trigger movement between them. More importantly, their stratified nature allows for the uncovering of causal mechanisms (Outhwaite, 1987: Wilson & McCormack, 2006). In the real world, which exists regardless of what we understand of it (Kazi, 2001), and is a 'multidimensional open system' (Wand et al, 2010: 234). Concepts in the real world are defined as entities, and the challenge for the realist researcher is to

expose the mechanisms within them (Outhwaite, 1987). Mechanisms may exist in the real domain, but are able to fire events and experiences which are in the actual domain (Bergin et al, 2008). Thus, as Bergin et al (2008) point out, realism is contingent on a belief that powers exist which may or may not be activated.

2.7.1 Emergence

Some mechanisms can lie dormant and undiscovered. Other (new) mechanisms can be uncovered and are described as having emergent powers (Danermark et al, 2002). Emergence is explained by Kazi, 2001: 3) as ‘the stratification of structures continually gives rise to new and emerging phenomena’. For Wand et al (2010: 234), emergence describes ‘the consequences, both intended and unintended, of human actions in the real domain’. For researchers, critical realism provides a theory-driven approach to examining social programmes, where the ultimate aim is to learn more about social events and communication (Stickley, 2006). Critical realism was well-suited to the aims and objectives of this study where the aim was to build theory about successful intermediary mechanisms. However, questions have emerged in the literature about critical realism’s philosophical basis, a question which is now explored in depth.

2.7.2 Critical realism as philosophy

In the literature, there is some debate as to whether critical realism is a philosophy. In his earlier work, Bhaskar (1979:6) distinguished between philosophy and science, but made the point that philosophy must equally meet the rigid criteria that scientific enquiry is subject to;

“for once crude empiricist criteria of scientificity are abandoned there is no reason why philosophy, as so conceived, should not be potentially transient as, and cannot differ significantly in epistemological status from, substantive scientific theories”

For Bhaskar (1989: 1), philosophy “is the discipline that has traditionally underwritten both what constitutes science or knowledge and which political practices are deemed legitimate”. In other words, philosophy acts as the

‘underlabourer’ of science (Ehrbar, 1998: 1). Philosophy includes theories about ontology and epistemology (Westhrop et al, 2011). Whilst acknowledging that science informs our understanding of the world, the philosopher is more interested in finding out about the world that is informed by science (Ehrbar, 1998).

Oltmann and Boughey (2011) agree that the aim of critical realism is to uncover generative mechanisms to explain the why and how questions. It is this interpretation of reality that may help to explain the influences of different interactions within social constructs. The example of AIDS is offered by Porter (2001). Whilst the positivist researcher would focus on uncovering the causes and processes of AIDS, the interpretivist would seek to understand the experiences of people and their families and how they are affected by the disease. The interpretivist enquiry would be focused on a ‘dialogic approach’ which encourages understanding by exploring individual values and principles (Kazi, 2000). Realist researchers, on the other hand, would be interested in delving underneath what are observable, exposing values and beliefs and explaining relationships by methodically exposing the social roots and structures that influence the phenomena of AIDS. In taking this approach, critical realism acts to bridge the “schism between positivism and interpretivism” (Mingers, 2011:304), and also draws on different theoretical perspectives that reflect different academic/philosophical traditions.

As to ways of adapting the critical realism philosophy, Bhaskar (1989) provides a three step approach to building a scientific account to explain phenomena, guided by the concept of ‘retroduction’. According to Bhaskar (1989:19), the process begins with generating a hypothetical model of a mechanism or mechanisms, which “if it were to exist and act in the postulated way would account for the phenomenon in question”. The mechanisms are then studied empirically so that different explanations of the phenomena are developed. This is done through ‘working out additional phenomena which should be a consequence of the model, and which are open to empirical testing’ (Wainwright, 1997: 1265). The final step, in accordance with Bhaskar (1989) is to explain the explanations themselves. Through this process, critical realism is perceived as a process which progresses beyond actualism, interpretivism and constructivism (Syed et al, 2009).

2.7.3 Critique of critical realism

In sum, the tenets of critical realism can appeal to researchers attempting to make sense of the world in which we live. However, for some, the philosophical stance taken by realists is not stringent enough to base decisions on findings. For example, Wainwright (1997: 1265) writes that “realists should adopt a conservative principle so that the plausible is distinguished from the idly speculative”. It may be that this criticism stems from a deeper quandary within the world of critical realists. Adapting a fallibilistic perspective to theory and knowledge makes justifying progress difficult as it is hard to pin new findings to recognised sources of knowledge (Cruickshank, 2011). It would be better for realists to focus on finding problems within existing theories in order to review and refine them (Cruickshank, 2011). However, the nature of critical realism makes this difficult, as Cruickshank (2011, 15) notes that; “the issues with critical realism though is that its attempt to use its ontological argument as the condition of possibility of social science precludes the full development of such a problem-solving approach to the positive development of knowledge”.

Terminology is one problem as has been already alluded to in this chapter, and can lead to misconceptions. For example there is a tendency to discuss critical realism in different ways, such as framing it as an epistemology, method, or dogma (Yeung, 1997). As well as misconceptions, different philosophers have not always provided satisfactory explanation of the concepts that define critical realism, according to some writers. For example, Mingers (2011:315) writes that; “Bhaskar is actually quite vague about terms such as structure, mechanism, thing, powers and tendencies”. This tendency has the potential to lead to misinterpretations and confusion for those wishing to follow the approach to guide their own work. Critical realist parlance represents the breadth of different philosophical stances, and therefore naturally lends itself to different interpretations. However, Bhaskar’s philosophy most closely aligns itself with public health and programme evaluation (Wand et al, 2010), and resonates with the aims and objectives of this study. Critical realism aligns with the philosophical approach to this study. The place of critical realism within evaluation research is now explored.

2.8 Evaluation research

For this study, uncovering generative mechanisms within intermediary interventions or programmes warranted the use of a form of inquiry which acknowledges that ‘there is a unique social dimension to human action as opposed to merely a natural and psychological dimension’ (Alkin & Christie, 2004: 15). Conducting evaluation research in health and social care has exploded, fuelled by demands to find out more about the mechanics of how programmes work, rather than if programmes work (McEvoy & Richards, 2003). Evaluation research is not as much concerned with assimilating new knowledge as testing how knowledge is applied (Suchman, 1967). For this study, the contribution of intermediaries in promoting best practice is not clear and the knowledge of how they can be successful requires in-depth exploration.

Whilst evaluation research in social sciences research is well-established (Tilley, 2000: Pawson, 2006), it is not without its challenges. When Campbell provided an early framework for programme evaluation, he warned against the “recurrent seductive pitfalls of interpretation” (1969:409). For Tilley (2000:4), “the key problem for evaluation research is to find out how and under what conditions a given measure will produce its impacts”. However, Kazi (2001: 2) believes critical realism supports evaluation research to replicate Scriven’s white box evaluation approach; “which not only addressed the effects, but also the inner workings and operations of the components of a programme and how they are connected”.

2.8.1 Theory

For Scriven (1998), understanding the nature of theory is crucial for evaluators in the field of evaluation research. Evaluation theory “deals with how things can be evaluated and what can be known about the results” (Westhrop et al, 2011:2). Evaluators may be led to believe that they are conducting theory –driven evaluations through a process of “identifying the components of an evaluand” (Scriven, 1998:59). However, it is important to note that these components themselves do not constitute theory. As articulated by Merton, 1967:143), ‘it is only when such concepts are inter-related in the form of a scheme that a theory begins to emerge’. This point is a logical one when one considers the constituents of theory. A theory is defined as an “attempt to organise the facts –some ‘proven’, some more conjectural– within a domain of inquiry into a structurally coherent system” (Klee, 1997:12).

Sociological theories in particular are, according to Merton (1967:39) “logically interconnected sets of propositions from which empirical uniformities can be derived”.

Scriven (1991; 360) challenges the utility of theory in evaluations; calling theories “a luxury for the evaluator, since they are not even essential for explanations, and explanations are not essential for 99% of all evaluations”. Karl Popper proposed that evaluation should focus on verifying theories on which policies/ interventions are set (Tilley, 2000), but such theories are often assumed and may lack tangible evidence. Scriven (1998) believes that sometimes, a ‘black box’ evaluation is adequate, but Kazi (2000) advocates a ‘white box’ approach (as explained above) to explain the core workings of any given programme. Trochim (1998) is concerned by Scriven’s instrumentalist perspective, arguing that, in general, it is very difficult to find successful interventions. Moreover, if interventions work or not, a black box approach might miss the opportunity for improvements or alternatives (Trochim, 1998).

In realist terms, evaluation applies to ‘most fields of human social life in which policies, programmes or projects attempt to intervene’ (Hewitt et al, 2012: 250). Understanding ‘what works’ involves ‘evaluating the impact’ of different interventions (Davies et al, 2000: 254). Whilst some interventions are aimed at the individual, others are more ‘programmatic’, whereby collective as well as individual outcomes are the ultimate goal (Davies et al, 2000: 254). Programmes can be identified as small, single cases, or as whole systems (Hewitt et al, 2012). Programmes change and ‘have the habit of self-transformation’ (Manzano-Santaella, 2011: 21), but their main purpose is to ‘create change’ (Westhrop et al, 2011: 5). However, in realist language, the change is brought about by the changes in behaviour of participants as a result of the resources that the programme offers (Westhrop et al, 2011).

Complex social interventions are programmes which offer resources of different kinds that activate a form of response on behalf of programme participants (Hewitt et al, 2012). In healthcare, with the emphasis on evidence-based best practice, interventions become complex due to the nature of the context they become embedded in, and the nature of the problems they are designed to address (Pawson et

al, 2011). The section below presents the components of complex social interventions as defined by Pawson et al (2011: 519).

“Programmes are active, not passive. Interventions do not work in and of themselves; they only have affect through the reasoning and reactions of their recipients”

This statement reinforces how programmes induce change to how people make choices (Pawson, 2013).

“Programmes have long implementation chains and multiple stakeholders. Recipients are many and varied; reactions to programmes thus differ; outcomes are thus generally mixed”

In healthcare, practitioners, patients, policy-makers and evaluators can all be stakeholders (Pawson & Tilley, 1997), and therefore, multiple outcomes can be uncovered.

“Programmes are embedded in complex social systems. Recipients are rooted in different localities, institutions, cultures, histories, all of which shape the fortunes of a program”

Social systems consist of ‘the interplays of individual and institution, of agency and structure, and of micro and macro social programs’ (Pawson & Tilley, 1997: 63).

“Programmes are implemented amid the turbulence of other interventions. The policy agenda is delivered through a multitude of interventions, each one interfering with the reception of another”

As Pawson (2013:63) explains, ‘interventions attempt to change history but never in conditions over which they have control’.

“Programmes beg, steal, borrow, and adapt. Practitioners work constantly to improve the delivery of interventions rather than preserving uniformity to meet evaluation and trial requirements”

This statement highlights the instinctual nature of humans to carry out actions which are designed to improve programmes.

“Programmes are the offspring of previous interventions. Social problems are longstanding; interventions evolve to try and combat them; the success of a current scheme depends on its history”

Pawson (2013) refers to how interventions mutate and can never be faithfully reproduced.

“Programmes change the conditions that make them work in the first place. An intervention’s success is always time limited since alleviating a problem always involves changing its concomitant causes”

In reality, programmes have a short ‘shelf life’ (Pawson, 2013), as they rely on the dynamics in the social world in which we live.

In short, complex interventions, as defined by Pawson et al (2004) and Sridharan et al (2006); “are comprised of theories, involve the actions of people, consist of a chain of steps or processes that interact and are rarely linear, are embedded in social systems, are prone to modification and exist in open systems that change through learning” (McCormack et al, 2006: 15).

2.8.2 Programme theory

Programme theory “describes the theory built into every programme” (Westhrop et al, 2011:2). In other words, programme theories represent how programmes should induce change. Friedman (2001) charts the development of programme theory (also termed theory driven evaluation) as an established approach to understanding programmes and how they operate. Inherent within the programme theory approach is an acceptance that theories of action are embedded within the evaluation (Friedman, 2001). Programme theories explain the effects observed of a unique programme (Dixon-Woods et al, 2011). For Pawson (2003: 472), the sole hypothesis that relates to every programme is expressed thus; ‘If we provide these people with these resources it may change their behaviour’. Pawson (2003) views programmes as theories and that the purpose of the evaluator is to test the programme components to build theory. Programmes can be highly complex, and evaluators have to choose which ‘small slice of a complex pie’ to investigate (Westhrop et al, 2011:11).

Programme theory is developed either before a programme's conception, or retrospectively (Astbury & Leeuw, 2010). Programme theory can be represented in different ways including through programme logic and theory of change (Westthrop et al, 2011). Policy evaluation researchers now integrate elements of critical realism in investigations which aim to improve policy (McEvoy & Richards, 2003). However, theory-driven evaluations are faced with the challenge of establishing sound theory within a permitted, often tight, time frame (McEvoy & Richards, 2003). Further, ensuring timely results for the funders and policy agenda is often dependent on the very nature and timing of the research (Pawson, 2006). The design of evaluation research must also be considered carefully to maximise the potential of uncovering generative mechanisms (Julnes et al, 1998). In addition to formal programme evaluations sponsored through funders, it is argued here that independent evaluations are equally as important in constructing knowledge around mechanisms that trigger outcomes within programmes. This study set out to produce an independent evaluation to inform policy makers, managers and practitioners of the ways in which different intermediaries can be successful to promote best practice in healthcare.

2.8.3 Middle-range theory

In realist evaluation, the pathway between how interventions lead to certain outcomes are termed middle-range theories (Marchal et al, 2012). Smith (2008: 9) explains how middle range theories can be developed from 'retroductive processes of rhythmic induction-deduction'. According to Merton (1967:68), middle-range theories 'consist of limited sets of assumptions from which specific hypotheses are logically derived and confirmed by empirical investigation'. In other words, middle-range theories usually need to possess some degree of abstraction but remain 'close enough to observed data to be incorporated in propositions that permit empirical testing' (Merton, 1967:39). This is a challenging concept for the researcher to get to grips with, and implies that mid-range theories need to make sense to whoever is using them. For Jagosh et al (2011), mid-range theories are programme theories which remain relevant in different contexts. According to Jagosh et al (2011:7), mid-range theories describe 'theory that is not abstract to the point of being disconnected from the actual workings of program implementation, yet, not specific to the point of being relevant to only one case'.

2.9 Realist Evaluation

Pawson (2003) refers to two approaches to evaluating programme theories, the realist evaluation approach, and the theory of change approach. As Blamey and Mackenzie (2007) point out, the two terms are often used interchangeably. However, a theory of change approach demonstrates how an intervention works (Carroll et al, 2005), and starts by exposing the theories that are thought to operate a specific programme (Byng, 2011). A main feature of the theories of change approach is that stakeholders have overall charge of the theories (Blamey & Mackenzie, 2007), and the study of the intervention is determined in sequential steps. The other approach, and the one adopted for this study, is described by Pawson (2003:473) as the ‘realist’ evaluation approach. In essence, realist evaluation is a form of programme theory (Westhorp et al, 2011). To understand the real world of people operating within complex organizational arrangements requires a pluralist approach to evaluation (Kontos & Poland, 2009). Terminology changes with time. Kazi (2000) points to the proneness or inclination implication of the term ‘realistic evaluation’, whereas, on the other hand, realist evaluation implies a clearer definition of the paradigm.

Realist evaluation is underpinned by the philosophy of critical realism (Wand et al, 2010), to facilitate an understanding of a more inclusive picture of reality (Spencer, 1995). In this way, the work of realist researchers continue to advance towards generative causality whilst simultaneously moving away from a cause and effect approach (Tolson et al, 2007). Realist evaluation relies heavily on a belief that people themselves can influence the success or failure of any given programme (Timmins & Miller, 2007). According to Julnes et al (1998), realist evaluation supports the open system perspective of realists, a ‘constellation of interconnected structures, mechanisms and contexts’ (Kazi, 2003:5). Realist evaluation is theory-driven (Greener & Mannion, 2009), and focuses on the mechanisms of action of programmes or interventions, through unravelling and uncovering the unobservable components. Pawson (2003: 472) explains the theory-testing philosophy of evaluation which ‘seeks to discover whether programmes work; programmes are theories. Therefore it follows that evaluation is theory-testing’. Westhorp et al (2011: 1) explain that for a realist evaluator, ‘programmes are ‘theories incarnate’.

Through this theory-driven approach, the realist evaluator examines the relationships between mechanisms of action and the contexts in which they are triggered. Explanations of how outcomes, successful or otherwise, are affected can be surmised through this process (Gill & Turbin, 1999; Greener & Mannion, 2009). Logically, this then enables a clearer understanding of why some programmes/interventions work for some and not for others. Through unravelling the inner workings of a programme or intervention, realist evaluators also attempt to explain links between ‘components of these layers of social reality’ (Byng et al, 2005: 72). Pawson and Tilley (1997) refer to this concept as ‘embeddedness’. In essence, realist evaluators are interested in identifying and understanding the steps taken by people carrying out actions within a social programme. In other words, the focus of the evaluation should not presume that human actions can be changed to improve a programme or intervention. The focus should be to understand the complicated layers that exist below that which can be observed at the surface, and to explain the reasoning behind human action (Pawson & Tilley, 1997; McEvoy & Richards, 2006). Blamey and Mackenzie (2007: 446) refer to this aim of realist evaluation as ‘being more concerned with psychological and motivational responses leading to behaviour change’. This feature of realist evaluation enables the process of learning about what works, and to consider how it can be applied in different programmes over a period of time (Westhrop et al, 2011). There is a subtle difference between this approach and the previously discussed theories of change approach whereby the actions within a given programme are driven through the emerging theories.

Tilley (2000) explains that the purpose of a realist evaluation is to develop context-mechanism-outcome configurations (CMOCs), to explain ‘what works for whom in what circumstances’ (Pawson, 2006: 25). For Marchal et al (2012: 202), ‘change occurs when interventions, combined with the right contextual factors, release the generative mechanisms’. The process starts with a middle-range theory, and ends with a refined middle-range theory (Pawson & Tilley, 1997). For realist evaluators, ‘unobservable underlying mechanisms give rise to observable events’ (Julnes et al, 1998: 4). Initially developed as conjectured or hypothetical theories, the configurations are then followed up by testing (Tilley, 2000). For this study, the CMO framework would provide a structured approach to understanding how different intermediaries promote best practice in infection prevention and control,

what works, and in which contexts, and to uncover new findings that could be important for other programmes (Julnes et al, 1998). As Stame (2004:62) explains, ‘it is not programmes that make things change, it is people, embedded in their contexts, who, when exposed to programmes, do something to activate given mechanisms, and change’.

2.9.1 Mechanisms

From the realist evaluator’s perspective, ‘the underlying mechanisms that give rise to the event are the focus of the critical realist study’ (Wilson & McCormack, 2006:48). Pawson and Tilley (1997) emphasise the importance of defining ‘mechanisms’ of action for the evaluation process, using the analogy of a clock to illustrate that only by examining the ‘clockworks’ can one really understand how it works (Pawson & Tilley, 1997). A focus on uncovering mechanisms through opening the programme ‘black box’ enables the development of clarity around what works within the programme (Julnes et al, 1998). The question; ‘what is it about a measure which may lead to it to have a particular outcome pattern in a given context?’ denotes the importance of understanding the true nature of mechanisms (Tilley, 2000: 7).

For Kazi (2003:27), identifying mechanisms is pivotal to “investigate how a programme actually changes behaviour”, but mechanisms are not infinite (Stame, 2004). Additionally, the degree of behaviour change will be contingent on the contexts (section 2.9.2), highlighting the fact that successful mechanisms can only be fired under the right conditions. “Confidence that the most pertinent mechanisms have been identified can be increased through the comparison of different contexts” (Porter & O’Halloran, 2011:2). However significant the concept of the ‘mechanism’ in the theory-driven and realist evaluation literature may be, it has not yet been subjected to clarity about its meaning (Astbury & Leeuw, 2010).

2.9.1.1 Exploring mechanisms

So far, the emphasis on uncovering generative mechanisms for programme evaluation is clear. However, realist evaluators face a challenging, but nevertheless necessary, exercise to define mechanisms. A sweep of recently published realist evaluation studies all emphasise the importance of uncovering mechanisms, but few provide the reader or evaluator with satisfactory interpretations of what the term

means for their specific study. Radulescu and Vessey (2008) lament the lack of clear explanation of causal mechanisms in studies purporting to take a critical realist approach. In a similar fashion, Gerring (2007) is concerned about confusion around different interpretations, and alludes to the challenges of defining 'mechanisms' within the social sciences. Astbury and Leeuw (2010) refer to Pawson and Tilley's (1997) book as the first to provide a comprehensive breakdown of the term 'mechanism'. In short, mechanisms are explained as 'choices and capacities which lead to regular patterns of social behaviour' (Pawson & Tilley, 1997: 216).

Astbury and Leeuw (2010) are adamant that mechanisms are different from programme variables, suggesting that the former exist at a higher degree of abstraction than the latter. Their paper is a comprehensive investigation of mechanisms for evaluation research, and provides useful guidance on how mechanisms can be sought and interpreted within programmes. Astbury and Leeuw (2010) refer to a typology, compiled from writers' perspectives, of different types and levels of mechanisms. According to Hedstrom and Swedberg (1998), mechanisms can be categorised according to their purpose and level of social interaction. For example, they describe 'action-formation' mechanisms. In essence, these mechanisms would impact on a micro to macro scale, and would explain how people make choices, based on their situation, what they believe in, and what their wants may be (Astbury & Leeuw, 2010). According to Hewitt and Sims et al (2012: 251), 'mechanisms are not just the programme resources on offer but the pathway from resource to reasoning and response', and relate to 'how' programmes are effective (Westhrop et al, 2011). The quest for the realist evaluator is to uncover the 'pathway from resource to reasoning' (Pawson, 2003: 473), and to find out the consequence of this path for the programme being studied (Pawson & Tilley, 1997). For Pawson (2003: 473), resources can be described as 'material, cognitive, social or emotional'. Reasoning describes how people make sense of the resources that are offered by interventions within programmes, and what leads to their responses. People, in this instance, can be the receivers of the programme or intervention, but they can also be the programme organisers or those involved in the delivery of different interventions. Weiss (1997: 46) also refers to 'cognitive, affective and social responses' which have the potential to emerge as mechanisms.

Whilst useful examples are provided by Astbury and Leeuw (2010), it is questioned if the conceptualisations of mechanisms (as perceived through the realist lens) can, or indeed, should, be reduced to categories and levels, as to do so might detract from the development of new and emerging mechanisms. Indeed, whilst Pawson & Tilley (1997) provide some guidance as to the nature of mechanisms, they restrain from offering an overarching definition. This they do for a reason. As they explain, they are keen to see mechanisms being embedded within the whole process of realist evaluation, and not be conceptualised as a separate feature (Pawson & Tilley, 1997). However, Astbury and Leeuw (2010) also appear to step away from labelling and categorising mechanisms in evaluations, and instead focus on supporting the use of evaluators' imagination in the development of theory.

Others have attempted to explain the nature of mechanisms through the use of simple examples to illustrate their nature and purpose (Keat & Urry, 1975; Westhrop et al, 2011). To a degree, offering analogies to show how mechanisms might be identifiable in different situations (or programmes) might be helpful, although for studies focusing on human behaviour, concrete examples may not always translate helpfully into cognitive ones. For realist evaluators, striving to uncover what lies beneath complex social situations, a paucity of clear definitions of terms can be frustrating. However, Weiss (1997) is one writer who provides an example, using a contraceptive counselling programme. For Weiss (1997: 46);

'if counselling is associated with reduction in pregnancy, the cause of change might seem to be the counselling. But the mechanism is not the counselling; that is the program activity, the program process. The mechanism might be the knowledge that participants gain from the counselling'

For Westhrop et al (2011: 5), a mechanism 'refers to how programs change people's decision-making: what people do in response to the resources that the program provides'. Pawson and Tilley (1997) refer to three main features of programme mechanisms, namely their embeddedness, propositional, and demonstrative power. Embeddedness refers to the location of the causal powers (of mechanisms) within accepted systems of relationships and structures. Mechanisms are propositional in that they allude to different processes that interact within a programme. Lastly,

mechanisms demonstrate the links between the cognitive choices people make and the programme outcomes (Pawson & Tilley, 1997). In his attempt to define mechanisms, Elster (1990: 3) provides a return to the fundamental basis of social science to explain events and facts, describing events as ‘individual human actions, including mental acts such as belief formation’. Explaining events, according to Elster, requires linking them with ‘causal mechanisms’. But causal mechanisms are different from the way causes are described (Elster, 1990).

It is generally agreed that mechanisms are unseen, and have to be uncovered. For example, social mechanisms, according to Pawson and Tilley (1997), are characteristics that are observed through individuals’ belonging to certain groups within society. In other words, they are not directly observable, but emerge through an investigation of the social setting. Astbury and Leeuw (2010) believe that another key characteristic of mechanisms revolves around their dependence on context (and on other mechanisms). Of course, this is in line with the realism philosophy, as mechanisms can never be causal ‘laws’ (Astbury & Leeuw, 2010). In other words, certain mechanisms can be uncovered in one context, but may not be apparent or appear to be triggered in another.

The other main characteristic of a mechanism is that they lead to outcomes (Astbury & Leeuw, 2010), but only when fired by a specific context (Westrop et al, 2011). But in a realist evaluation, the aim is not to find answers to ‘does it work’ questions; therefore, a different approach needs to be taken to understanding the relationship between mechanisms and outcomes. Rather, the realist evaluator strives to uncover mechanisms (which may not be observable), and identify contexts, which, together, form outcomes which can be observed (Astbury & Leeuw, 2010).

To conclude this section, attention is drawn to the work of Gerring (2007: 177), who found nine different meanings of mechanisms within social science literature (Table 2.1):

1.Pathway or process by which an effect is produced
2.A difficult to observe causal factor
3.An easy to observe causal factor
4.A context dependent (tightly bounded)explanation
5.A universal (i.e. highly general) explanation
6.An explanation that presumes highly contingent phenomena
7.An explanation built on phenomena that exhibit law like regularities
8.A distinct technique of analysis (based on qualitative, case study or process-tracing evidence)
9.A micro-level explanation for a causal phenomena

Table 2.1: Mechanisms: Nine meanings from the Social Sciences (Gerring, 2007)

As an exercise to help with clarity of interpretation, these features were all considered for their utility in building a comprehensive definition of mechanisms for this study. Statement one hints at the ‘mechanismic’ approach to causation (which would imply that a clear pathway is observable to demonstrate cause), and a ‘covariation’ approach (not always requiring the identification of causal mechanisms). In reality, this study does not claim to be either, rather, it takes the view that causal mechanisms need to be identified in order to move from non-explanatory to explanatory propositions about phenomena (Waldner, 2007).

Statements two and three refer to the observability debate around mechanisms. For this study, the realist review of evidence has resulted in a model of hypotheses, i.e. ideas around how intermediary programmes might, in theory, operate/be successful. Gerring describes a process of getting ‘closer to the meat of things’ (2007: 167), which can work in one of two ways –deductively (based on already established

causal ‘covariations’), or, as in the case for this study, a more inductive approach which aims to build on the initial uncovering of hypothesised mechanisms to develop a more empirical understanding (Mahoney, 2003).

Statements four and five refer to the explanatory powers of mechanisms. For this study, being guided by the realist approach entails staying true to the belief of the mechanism being contingent on the context within which they are situated. Thus, the study follows an inductive approach which aims to explain outcomes by uncovering the mechanisms which are triggered by specific contexts (Gerring, 2007). Purporting to be universal explanations would require a series of cumulative studies of the same mechanism under different contexts to reach empirical agreement.

Statements six and seven describe the two approaches to considering the ‘regularity’ of mechanisms (Gerring, 2007; 170). Statement 6 appears to fit this study best in that it implies the dependency of mechanisms on different contexts. Further, realist evaluation reflects a belief in tendencies, as opposed to law like regularities. For this study, it was important to bear in mind that regularities could change dependant on different contexts. This study, adopted a middle ground approach, considered to be the best fit, whereby the research aims to uncover mechanisms which are ‘highly regular, but not perfectly invariant’ (Gerring, 2007: 170).

Statement nine refers to the debate between structural and individual interpretations of mechanisms. It is argued that better understanding of phenomena will result from understanding the individual elements that constitute the phenomena. In the words of Gerring (2007: 176), ‘knowledge should be attained brick by brick; slowly, the shape of a larger structure will come into view’. In essence, this helps to explain the focus on middle range, (as opposed to grander) theory development in realist evaluations. However, to concur with Gerring’s concerns, this study does not focus attention simply on the minutiae of individual behaviour, as to do so would limit the potential of the study to uncover other, more structural mechanisms.

2.9.2 Context

In contrast with earlier views of evaluation theorists, realist evaluation is context dependent (Julnes et al, 1998). Syed et al (2009: 9) refer to the beliefs within the tenets of critical realism where a multi-layered view of causality is explained by

examining the local context which activate the mechanisms, “these could be at a variety of exogenous levels –types of organisations, geographical regions, and cultures, or endogenous levels: relationships between individuals, groups, and organisations”.

According to Tilley (2000:7), context evaluation is required to understand “what conditions are needed for a measure to trigger mechanisms to produce particular outcome patterns”. Additionally, Pawson and Tilley (1997: 216) believe that the study of context is necessary to understand “for whom and in what circumstances” the intervention or programme works. Context may be defined as space or place, whereby human interaction takes place under the “appropriate social and cultural conditions” (Pawson & Tilley, 1997: 57). For Timmins and Miller (2007: 10), context is described as the “settings within which programmes are placed or factors outside the control of programme designers (people’s motivation, organisational contexts or structures)”. In essence, by examining the context in a realist evaluation, it is possible to deduce conditions that activate certain mechanisms that then result in certain outcomes (Gill & Turbin, 1999).

Westhrop et al (2011) provides guidance on how to assess context prior to an evaluation, and provides a long list of possible contextual features that might feature in individual programmes, ranging from geographical to historical to population groups. However, whilst Westhrop et al (2011) tends to categorise context according to different geographical settings, Pawson and Tilley (1997:70) discuss contexts as pre-existing “social rules, norms, values and interrelationships”, which gives rise to the power of contexts in enabling mechanisms to be activated successfully. Put simply, mechanisms in a non-conducive context (where there may be conflicts within social groups, negative attitudes and influences) may not be uncovered or triggered to produce the right outcomes.

Pawson and Tilley (1997) refer to context as the ‘partner’ of mechanisms, and warn realist evaluators of the challenges of managing context. Context is approached as “the interrelationship between real and emergent or possible properties of structures and agents” (Kontos & Poland, 2009: 5). In a realist evaluation of a programme or intervention, Archer’s framework (1995) can provide the necessary signposting to understanding context (Greener & Manion (2009). The framework is based on

Archer's (1995) morphogenetic approach to studying processes which affect the structure in social systems, and which places emphasis on considering the past as an influencing force for realist researchers (McEvoy & Richards, 2003). Archer's work is based on two key principles, namely emergence and analytical dualism. Emergence posits that "new properties can emerge on the basis of existing properties" (Zeuner, 1999:79) and provides descriptions of some of the characteristics of properties for guidance, such as that properties are independent of each other. Analytical dualism calls for examining the relationships between structure and agency/ culture and agency without merging them together (Zeuner, 1999).

In terms of realist evaluations, Archer's framework can provide further substance to the exploration of context. The framework labels the relationship between stakeholders or those with a significant interest within policy contexts, based on policy theorizing, and expose the 'situation logics' of the scope of the relationships which help to understand the implications of using or introducing certain mechanisms (Greener & Mannion, 2009). The framework considers the relationship between stakeholders in policy contexts determined by the level of their interaction with each other. Thus, relationships may be deemed necessary or contingent and/or compatible/incompatible (Greener & Mannion, 2009).

2.9.3 Outcomes

Outcomes are what shape the findings of any evaluation where the evaluator is interested in several options. These include learning from programmes, recommending new programmes, or suggesting changes to, or dissolution of existing programmes (Pawson & Tilley, 1997). In other words, the power of outcomes resulting from realist evaluations should not be underestimated. Outcomes may have single or multiple effects (Pawson & Tilley, 1997). Additionally, outcomes can be related to impact (for example, a change in behaviour), or process (whether an intervention worked or not) (Kazi, 2003). However, the nature of outcomes may not always be cumulative, as they are contingent on the relationship between different contexts and mechanisms. In realist evaluation, outcomes reflect, or represent, the responses to different mechanisms in particular contexts.

2.9.4 Stakeholder engagement

In realist studies, according to Pawson and Tilley (2004:12) “stakeholders are regarded as key sources for eliciting programme theory and providing data on how the programme works”. In adopting the realist principles for the study, Pawson and Tilley (1997) emphasise the importance of involving stakeholders from the outset. In this way, the “engine of the method is thus an exchange of meaning between the researcher and all program participants” (Pawson & Tilley, 1997: 18). This study used stakeholder engagement to formulate the review questions and check the study’s findings.

2.9.5 Demi-regularities

Through conducting a series of investigations, evaluators can consider the potentially different effects that result from a given intervention, and start to identify patterns of regularity (Tilley, 2000). In realist terms, demi-regularities are described as “semi-predictable manner” of human reasoning from one context to another (Jagosh et al, 2011: 7). As contexts and mechanisms may vary in their complexity, evaluators need to be aware of the potential ambiguous nature of the whole process (Byng et al, 2005). Pawson and Tilley (1997) warn of the multiplicity spanner in the works, and emphasise that the role of the evaluator is to focus on testing the theories. Wong et al (2010:2) describe demi-regularities as “semi-predictable reoccurring patterns of behaviour”.

2.9.6 Critique of Realist Evaluation

Realist evaluation is now an established methodology within health services research, as exemplified by studies concerned with evaluating complex interventions and service delivery. However, the approach is not always recognised for its potential to develop theory in any given programme (Lhussier et al, 2008). Julnes et al (1998) acknowledge the usefulness of the CMO framework as articulated by Pawson and Tilley, but question the adequacy of their methods. In particular, they suggest that uncovering underlying mechanisms require alternative methods to those suggested by Pawson and Tilley in their book. Further, Julnes et al (1998:486) caution against proponents of realism engaging in dialogue that only emphasise different theoretical stances, pointing out that, “if realism is to be a genuine

alternative to the alternative controversies of the past, its promoters need to resist the same temptation to stereotype others in the effort to make their own positions seem more original and more reasonable”.

Lack of clarity around defining context and mechanisms raise dilemmas for the evaluator, according to Pederson et al (2011), an issue which resonated with the development of this study. Exploring the very many different interpretations of context, as it is described in the literature, was helpful to a degree. However, contextual understanding for this particular study would only be achievable through a process of wrestling with interpretations in the literature, and applying the tenets throughout the study's processes to reach a meaningful conclusion. In other words, the realist evaluator has to define context for a unique situation. It is not surprising that context is one of the features of realist evaluation which has come under scrutiny, primarily for a lack of clarity on how it should be addressed (Greener & Mannion, 2009). In truth, recognising that, through the critical realism lens, context is very specific perhaps stems from challenges of how to define contexts in social situations.

Julnes et al (1998) focus on the level of analysis required for a realist evaluation. Realism relies on a belief of “deeper levels of strata of reality” (Bhaskar, 1979:15), but how far the evaluator needs to drill down is unclear. Whilst Pawson and Tilley (1997: xiii) explain stratification as social programmes involving “the interplay of individuals and institution, and of structure and agency”, specific guidance for what appropriate levels of enquiry are needed are missing. Depending on different evaluators' perspectives, unpeeling different layers may be a necessity. For example, from a psychological perspective, the focus would be on understanding the human agency (Julnes et al, 1998). From a sociological perspective, the focus may be more towards understanding the contextual conditions (Julnes et al, 1998). This study needed to focus on both human and contextual perspectives to gain the understanding needed to advance new knowledge about different intermediaries.

Kazi (2003) is concerned that the researcher can subconsciously influence the emergence of causal mechanisms through experience and preconceived ideas. Just as problematic, for both researcher and funder/sponsor is that realist evaluations can emerge, not with simple answers, but with an intricate handful of findings (Westhrop

et al, 2011). This was a challenge to be mindful of throughout this study, requiring the focus to be maintained on the aims and objectives.

Marchal et al (2012) conducted a literature search to consider how the realist evaluation approach has been used in healthcare research. They used questions based around choice, application and problems of using realist evaluation in health systems research to guide their review. They found that the current body of literature in this area is small, and characterised by diversity. Eighteen papers in total were accepted in their review, published between 2008 and 2010. Authors justified their choice of realist evaluation either based on the argument that the study of interventions requires more than black box evaluation, or on the basis that the approach suits the study of complex interventions (Marchal et al, 2012). There was noticeable diversity in the application of realist evaluation, primarily a lack of reference to its philosophical underpinnings (Marchal et al, 2012). Terms were also interpreted in different ways and used interchangeably. For example, the study by Greenhalgh et al (2009) was based around one longitudinal organisational case study of a modernisation initiative. Their paper uses three of the emergent mechanisms to illustrate the complex process undertaken, and found a range of enabling and constraining factors for each mechanism, which they believe may be useful elsewhere for other programme evaluations. Mechanisms were identified around services, evidence use and involvement of users. However, Marchal et al (2012) believe that the term 'theory of change' was used to describe mid-range theory, and 'programme theory' used to represent 'refined' mid-range theory.

In particular, in their review, Marchal et al (2012) found considerable diversity in authors' attention to mid-range theory. For example, Tolson et al (2007) took a realist approach to their study which reported on the introduction of a new service within palliative care services. Whilst the framework was built into an iterative account of intervention progression over three evaluation points, it did help to illuminate enabling relationships around context, mechanisms and outcomes, relating to practitioners and practice development. However, Marchal et al (2012) found that this paper lacked reference to the development of the mid-range theory.

The second limitation referred to lack of application of the CMO configuration. Some papers were noted to use the configuration as Pawson and Tilley intended,

analysing the relationship between intervention, context and mechanism. For example, Clark et al (2005) conducted a realist evaluation of patient experiences of cardiac rehabilitation. They were able to differentiate between different groups of emerging mechanisms i.e. social and physical, and found that the mechanisms were linked to greater confidence, an essential factor for health behaviour change. Within mental health, Byng et al (2005) used realist evaluation alongside a randomised controlled trial to evaluate the effectiveness of a specific mental health link intervention. Three theoretical levels emerged, which the authors consider could be used elsewhere, specifically what they term second-level analysis, which shed light on the theory of link working.

The interpretation of the term mechanisms was explored through the review (Marchal et al, 2012). It was found that some authors stayed close to Pawson and Tilley's (1997) definition, for example, Pommier et al (2010) and Rycroft-Malone et al (2010), which found realist evaluation enabled the development of explanatory theory for broader service delivery around protocol and standardised-based care. Pommier et al (2010) explored the realist approach as a methodology to the evaluation of health promotion programmes within primary schools in France. However, other studies were found to interpret mechanisms in more obscure ways, and there was some confusion between interpretations of mechanisms and contexts (Marchal et al, 2012).

2.10 Summary

Thus far, the contents of this chapter have discussed the methodological underpinnings of the study, and have described the concepts that Pawson and Tilley (1997) refer to as the elements of programme systems. The rationale for choosing realist evaluation has been detailed. However, alternative approaches were also considered for this study, and the next section briefly outlines this thinking.

2.11 Consideration of alternative approaches for this study

At this point, it was important to consider if other methodological approaches would have been appropriate for this study. Grounded theory, with its symbolic interactionism origins which leans towards critical realism ontologically (Annells, 1996), could have been appropriate for this study, whereby little is understood of the

phenomenon of how intermediaries promote best practice (Holloway & Todres, 2010a). However, the approach can be criticised for lacking attention to social structure and culture (Holloway & Todres, 2010a). For this study, it was considered important to choose an approach which would illuminate factors which can influence the success or failure of intermediary programmes. Moreover, the interest was not as much about the ‘processes of meaning making in interaction’ (Holloway & Todres, 2010a: 155), but more about the actual mechanisms which impact on the reasoning or behaviours of participants.

A different approach which was considered for its suitability was ethnography. Whilst a simple definition of ethnography would be related to the study of ‘culture or social group’ (Holloway & Todres, 2010b: 165), Whitehead (2004) argues that interpreting culture is highly complex. However, the emphasis of this approach on understanding context, akin to realist evaluation, warranted further exploration. Whilst it is argued that ethnography can contribute to realist evaluation studies, the realist evaluator is not satisfied with explorations of the experiences of social groups (Robson, 1993: Holloway & Todres, 2010b), but rather with identifying the “potential causal mechanisms” (Kazi, 2003: 23) which produce different outcomes for complex social interventions. Moreover, the emphasis placed on participant observation in ethnographic studies (Whitehead, 2004), may have resulted, for this study, in missing out on important descriptions of mechanisms whereby elements of the realist evaluation approach were designed to capture these.

2.12 The Realist Evaluation Cycle

Pawson and Tilley’s (1997)’s realist approach was useful to maintain focus throughout the study. The realist evaluation cycle is presented here to illustrate the stages of the study based on the principles of the realist evaluation approach. The cycle demonstrates the cyclical nature of the approach, the cycle commences with deciding on the research questions, aims and objectives. The next chapter reports on the next stage of the cycle, the first phase of the study, a process of articulating the programme theories through a realist review of the evidence, stakeholder consultation and case study one. As illustrated in the diagram, formulation of the CMO propositions is then followed by a second case study in order to test and refine the theories. Following this process, a set of demi-regularities emerged.

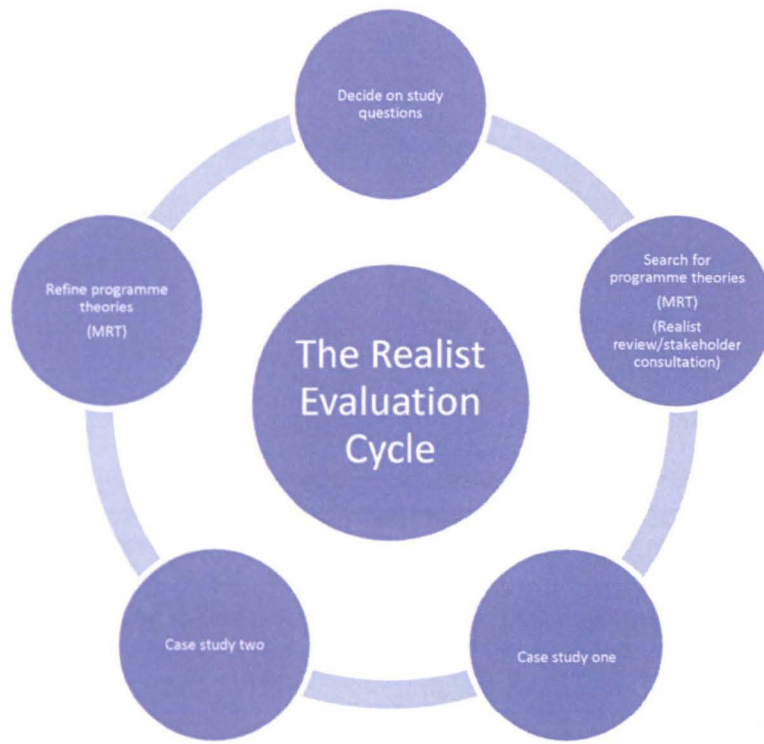


Figure 2.1: The Realist Evaluation Cycle (adapted from Pawson & Tilley, 1997)

2.13 Conclusion

The contents of this chapter have presented the path undertaken to reach the choice of the study's methodological approach. From the initial consideration of different philosophies, the approach of critical realism and realist evaluation emerged as being most suitable to address this study's aims and objectives. In essence, this study was designed as an attempt to capture the *beyondness* of what is observable to understand the contribution of intermediaries operating within healthcare practice. Choosing critical realism as the theoretical basis for this study would enable a better understanding of the underlying social structures and systems that influence the complex world of healthcare, and, especially, the domain of infection prevention and control practice. The growing popularity of realist evaluation as a methodological approach is its ability to seek the generative mechanisms which show the successful elements within complex interventions. Using this theory-driven methodological approach was deemed appropriate to enable an in-depth evaluation of intermediaries, and uncover their potential contribution to promoting best practice. Additionally, realist evaluation focuses attention on context, to understand how the relationship between mechanisms and certain contextual factors show the processes that together contribute to certain outcomes. The next chapter chronicles the realist

review, a process which was essential in order to contribute to developing the study's programme theories.

CHAPTER 3:

The Realist Review

3.1 Introduction

Chapters three of this thesis is a report of the realist review of the evidence to search for the programme theories that show the potential contribution of the intermediary to promote best practice (Pawson, 2013). Existing evidence about the intermediary in infection control practice is reviewed in order; to develop theories that explain what works, how, in what respects, and under which circumstances. The findings from the realist review provide a range of programme theories which are then refined through data collected from two mixed methods case studies (reported in chapters four and five). The process of undertaking the evidence review and the case studies were instrumental to illuminate the potential impact of the intermediary to promote best practice.

As outlined in chapter two, the realist approach is increasingly being used in health services research, especially where the task is to evaluate complex social interventions and elicit better understanding of how interventions work. The evidence review was guided by the principles of realist evaluation, so that the task was always focused on seeking (in terms of the aims of the study), interactions between contexts, mechanisms and outcomes (Wong et al, 2010). As highlighted in chapter one, little evidence currently exists which show the exact mechanisms of how intermediaries trigger behaviour or practice. The realist review in this study was intent on searching for the existing evidence that would reconstruct what is already known about the intermediary, and to understand why different intermediaries may be more successful in particular contexts. Pawson (2013) explains how, in a realist review, multiple sources of evidence are accessed and scrutinised in order to reconstruct the programme theories. In this realist review, a range of sources of evidence were sought, from stakeholders, policy, research, health and social science databases, and grey literature (Pawson, 2006).

3.2 Summary of the realist review

The principal objective of a realist review is to provide explanations of how interventions work by extracting and then examining the programme theories which underpin interventions and their actions (Pawson, 2006). This specific approach to evidence reviewing resonated with the aims and objectives of this study, in the ways chosen to seek better insight into how intermediaries work. In realist reviews, the researcher seeks the initial propositions about programmes or interventions, which are then examined in more depth to understand their potential contribution (Pawson, 2006). Programme theories emerge through the development of a range of initial theoretical hypotheses, resulting from a complex process of extensive evidence search, integration of stakeholder involvement. The process is strengthened by a scrutiny of primary research (Pawson, 2004; Pawson, 2006). In theory-driven evaluation of complex interventions, the first task is to articulate the programme theories, which is followed by research evaluation (Walshe, 2007).

The realist review process was commenced through a process of stakeholder engagement to develop the review questions, followed by a synthesis of existing evidence to illuminate the programme theories that show the potential contribution of the intermediary to promote best practice. To justify the approach chosen for this study, the next section presents a précis of the principles of the traditional Cochrane type systematic review alongside the description of the realist approach.

3.3 The systematic review

The systematic review is described as a; “process of secondary research that identifies studies relevant to a particular topic, appraises the quality of these studies according to predetermined criteria and synthesises their results” (McCormack et al, 2007:14). The systematic review is a recognised system of reviewing a body of evidence so that decisions on the effectiveness of interventions in practice can be made (Pawson, 2006). Through the process of systematic review, “the effectiveness of interventions, using explicit methods to reduce bias, have the potential to inform decision-makers as to which interventions to implement, modify or withdraw from health care” (Murthy et al, 2012: 4). In systematic reviews, the review questions are often framed using the PICOS acronym (CRD, 2009), which help to shape the inclusion criteria for study reviews, guided by very specific questions:

Participants
Interventions
Comparators
Outcomes
Study design

Table 3.1: PICOS acronym

The evidence that can be included in the review is guided by a hierarchy of study designs (CRD, 2009). Conclusions are drawn from considering the strength of the evidence, and reporting observed effects and inconsistencies (CRD, 2009). Undertaking this process should, in theory, provide assurance for stakeholders and patients alike that the most effective interventions are being recommended for practice, based on the reliability of the review process (Pawson et al, 2004). Put simply, systematic reviews and their findings provide information on which decisions are made based on the options available, so that evidence-informed interventions are implemented in practice. However, flaws have been recognised in the traditional systematic review approach. Heterogeneity within participant groups or within the results of the review has implications for the reliability of systematic reviews (Crowther & Cook, 2007). For example, if there is greater heterogeneity in the results (statistical heterogeneity), general intervention effectiveness is more likely to be in question (Crowther & Cook, 2007). Where the quality of studies is deemed to be poor, or little data is available, the quality of the systematic review will be threatened (Crowther & Cook, 2007). Other influences which can introduce bias into the review can include funding sources, and the inclusion of unpublished data (Crowther & Cook, 2007). Furthermore, and important for the context of this study, the process of systematic review focuses on effectiveness without due concern being given to the complexities within social systems which can impede intervention implementation in different situations (McCormack et al, 2006).

It has already been established that what *should* constitute best practice in infection control is reflected in the current policy context (chapter one, section 1.10.2). However, a comprehensive understanding of how different interventions (including

the intermediary) can be to promote best practice is an important gap in the literature. Several authors have referred to the gargantuan task that faces reviewers when it comes to evaluating the effectiveness of healthcare interventions (Pawson et al, 2004). In addition to considering which theoretical paradigm informs the research design, there may also be different forms of evidence for consideration. Moreover, Pawson et al (2004) refer to the complexities of reviewing healthcare interventions which are already complex through polarised political, social and financial agendas. Other authors are concerned about how the rigid approach of the traditional systematic review can provide realistic guidance for the implementation of interventions in the reality of complex practice contexts (McCormack et al, 2006). Providing evidence that interventions work does not necessarily convince stakeholders that the interventions are right *for them*.

For the review in this study, with its focus on seeking the programme theories to explain what works, and how different intermediaries can contribute to promoting best practice, it was important to choose the appropriate approach to the evidence review process that would address the study's aims and objectives. During the decision-making process, it was considered that the traditional Cochrane type systematic review was not relevant to the research questions, and not congruent with the epistemological and ontological foundations of this thesis.

3.4 Realist review

Understanding the shift in interest from a traditional Cochrane type systematic review approach to the realist approach requires is supported through an exploration of the underlying “logic” of evidence based practice (Pawson, 2002: 341). In short, three terms embody this logic; causation, ontology and generalisation (Pawson, 2002). For example, researchers conducting a the meta-analysis use a sequential approach to determining intervention success or failure, use the randomised controlled trial as the methodological trail, and attempt to generalise by focusing on which intervention or programme leads to the effect (Pawson, 2002: Hewitt et al, 2012). In contrast, the realist review or realist synthesis (the terms are used interchangeably in this thesis, as stated by Wong et al (2013) works under the principle that it is the unseen elements of a programme (the mechanisms) that lead to its success or failure. Causation can be unpredictable, the ontology focuses therefore

on mechanisms and outcomes and its claims to generalise are only true for specific interventions in specific contexts, underpinned by specific mechanisms (Pawson, 2002). Moreover, the focus of realist reviews is naturally broader than traditional Cochrane type reviews, as the focus is on evaluating context, mechanisms and outcomes at mid-range level (Gough, 2013). The realist review explores complex social programmes and seeks the theories in order to understand why interventions are successful in some instances but not in others (Hewitt et al, 2012).

Whilst a more traditional Cochrane type systematic approach has potential benefits, in making accessible to decision-makers the evidence that is available, or in showing where evidence is lacking (CRD, 2009), the process and the outputs may not represent the complexity which underpins healthcare systems (Rycroft-Malone et al, 2012; McCormack et al, 2013). Together with the traditional Cochrane type systematic review, the realist review acknowledges how different contexts can influence the success or failure of mechanisms (Pawson et al, 2004; McCormack & Wright et al, 2007). However, the realist review places considerable emphasis on the involvement of relevant stakeholders. The realist review offers “a cumulative understanding of the body of research in order to establish the evidence base for a generative mechanism” (McEvoy & Richards, 2003; 414). The following table from Hewitt et al (2012), shows the steps of a traditional Cochrane type systematic review, compared with the steps of the realist review, including the steps taken in this study:

Conventional systematic review	Realist review
Identify the review question	Clarify scope of review- refine and define realist question Decide upon purpose of review Stakeholder engagement
Comprehensive literature search using clearly predefined inclusion and exclusion criteria	Search literature with creativity, rigour and reflexivity, refining inclusion criteria as relevant studies are located
Quality appraisal of studies that meet inclusion criteria, focusing on methodological rigour	Quality appraisal to assess relevance for purpose
Extract data using standardised forms or matrices	Extract data using bespoke data extraction forms
Synthesis of data to obtain effect size (quantitative review) or transferable themes (qualitative review)	Synthesis of data to achieve refinement of the programme theories
Draw conclusions and make recommendations	Draw conclusions and make recommendations

Table 3.2: The steps in the conventional systematic review and the realist review (adapted from Hewitt et al, 2012)

In contrast to the traditional systematic review, the realist review follows a much more inclusive approach, which is a; “more heterogeneous and iterative process, which is less amenable to prescription but which needs to be equally rigorous” (McCormack et al, 2006: 5). The realist review approach focuses on the question;

“what is it about this programme that works, for whom, how and in what circumstances” (Rycroft-Malone et al, 2007: 12). This approach resonates with the study of programmes in complex healthcare systems, where decisions to implement interventions have to consider the practical question of how could they work within local contexts. Pawson (2006) places emphasis on the careful interpretation of key terms, highlighting the complex nature of exploring social interventions. He describes the importance of “abstraction” (Pawson, 2006; 76), explained as; “a movement from the empirical to the concrete to test theories about the potential mechanisms” (Kazi, 2003:110). In this way, the CMO framework can be used in abstract ways, to explain broad processes, or in more specific ways to examine how programmes work (Wand et al, 2010). Several realist reviews of complex interventions which focus on healthcare have previously been published (Hewitt et al, 2012).

3.5 Rationale for choosing realist review for this study

For this study, the area of interest was focused on intermediaries and their contribution to promoting best practice, in particular in infection prevention and control. Chapter one has highlighted the current lack of clear evidence to show ways in which different intermediaries impact on the behaviour of others, and be successful in promoting best practice. Chapter one also provided an overview of the tensions between policy and practice, whereby best practice in infection control can be compromised by a variety of factors that influence the implementation process. The following section describes the aims of the realist review in the context of this study. As shown in Figure 2.1 (p 83), the first stage in the realist cycle is focused on how to elicit the programme theories.

Standards for reporting realist reviews have now been developed by Wong et al (2013), and these were useful to guide the reporting of this review. The items used from the standards in this review are reported below in a table adapted from Wong et al (2013) and includes the page location of the item within this thesis:

Item	Process
Rationale for using realist review p 91	“Explain why realist review was considered the most appropriate method to use. In this study, the traditional Cochrane type systematic review has been considered, and the reasons for choosing the realist review method provided”
The search process p 98	“State and provide a rationale for how the iterative searching was done. Provide details of all the sources accessed for information in the review. Where searching in electronic databases has taken place, the details should include, for example, name of database, search terms, dates of coverage, and date last searched”
Selection and appraisal of documents p 100	“Explain how judgements were made about including and excluding data from documents, and justify these”
Data extraction p 100	“Describe and explain which data or information were extracted from the included documents and justify this selection”
Analysis and synthesis processes p 101	“Describe the analysis and synthesis processes in detail. This section should include information on the constructs analysed and describe the analytic process”
Document flow diagram p 102	“Provide detail on the number of documents assessed for eligibility and included in the review”
Document characteristics p 103	“Provide information on the characteristics of the documents included in the review”
Main findings p 106	“Present the key findings with a specific focus on theory building and testing”
Summary of findings p125	“Summarize the main findings, taking into account the review’s objective(s), research question(s), focus, and intended audience(s)”
Comparison with existing literature p 117	“Compare and contrast the review’s findings with the existing literature”

Table 3.3: Items reported in this review (adapted from Wong et al, 2013)

3.6 Aims and objectives of the realist review

Aims:

- to seek the programme theories that show how intermediaries might promote best practice in infection prevention and control, to show what works, for whom, how, and in which contexts

Objectives:

- Clarify the scope of the review
- Develop review questions through a process of stakeholder engagement
- Use review questions to search for the evidence
- Quality appraisal, data extraction and synthesis of specific evidence
- Develop initial hypotheses to guide empirical data collection that will test and refine the programme theories

3.7 Clarifying the scope of the review

According to Pawson (2004), the first step for a realist reviewer is to identify and clarify the scope of the review. The reviewer prioritises which elements of the complex social intervention are to be addressed (McCormack et al, 2006), and then undertakes a process known as mapping the territory (Pawson, 2006). For this study, the review was focused on exploring the evidence to seek the theories which explain the ways in which intermediaries are considered to promote best practice, particularly in the domain of infection control. The aim was to seek the programme theories, and gather evidence to hypothesise why and how intermediaries should succeed in changing behaviours or practice and contribute to promoting best practice. In essence, the realist review was concerned with answering the question; “what works” (Pawson, 2006: p21). Additionally, the process of the review was designed to articulate the underlying mechanisms (Hewitt et al, 2012). In a realist review, this stage is iterative and can be revisited at different stages (Hewitt et al, 2012).

Pawson (2004: 1) describes the initial review process as “conceptual mining”, which involves examining existing resources to identify concepts which can then be pulled together as a range of initial hypotheses. The hypotheses then provide the basis for

further testing and refinement. The initial evidence search process in a realist review is notorious for being complex and lengthy, and is often described as being immersed in a “swamp” of information (Pawson et al, 2004: 14).

3.8 Stakeholder engagement

For this study, the process of clarifying the scope of the review and setting clear review questions was driven by active stakeholder engagement. This was a valuable component of the review process which maintained face to face contact between the researcher and practitioners; “to keep the conversation going, and allow both sides to see where, and in what form, the findings are likely to be meaningful”(Huberman, 1990: 365). In this thesis (chapter two, section 2.9.4), reference has already been made to the contribution of stakeholder engagement in realist evaluation studies (Hewitt et al, 2012). Thus, stakeholder engagement was a vital component of the study, and was instigated from the start. The purpose of involving stakeholders at the early stage of the review was to seek and clarify clear review questions, and begin to articulate candidate programme theories. Involving policy makers and key individuals with vested interest is important; “to understand their framing of the problem and the programme’s solutions” (Hewitt et al, 2012: 255). By introducing key stakeholders to the study’s aims and purpose, their views and feedback could also be taken into account following completion of the study, to consider the significance of the findings for future practice and policy.

Purposive sampling was used to capture stakeholders “(who) have specific knowledge or experience of interest to the researcher” (Higginbottom, 2004:11). The criteria for inclusion in the group meetings were; individuals with a vested interest in infection prevention and control, including people with specific managerial or clinical responsibilities. Letters were sent to invite stakeholders to attend two meetings in either of two secondary care hospitals within one NHS Health Board covering a large geographical location (Hospitals X & Y). Two groups were convened. Meeting rooms were booked, and refreshments were provided. The meetings lasted up to two hours. The researcher acted as the moderator, and opened the meetings by providing a short introduction to the study in the form of a power point presentation (Appendix 3.1). Contemporaneous written notes were taken of the main discussion points. Table 3.4 shows the stakeholders who attended the meetings:

Meeting 1 (Hospital X)	Meeting 2 (Hospital Y)
Infection control nurse (n=2) Student nurse (n=2) Hospital manager (n=2) Infection control link nurse (n=2) Primary care practice facilitator (n=1) Patient safety representative (n=1)	Practice development nurse (n=3) Hospital manager (n=1) Ward manager (n=3)

Table 3.4: Stakeholder group meetings participants

Agendas for the meetings were set (Appendix 3.2) and the discussion focused on a set of questions for the review. The initial review questions were developed from an informal scope of the literature (Wong et al, 2013), and a scoping exercise to seek information about different intermediary description, their roles and functions (Appendix 3.3), and how they are described in the context of policy (Appendix 3.4):

Stakeholder group meetings set of questions
What do people in the identified roles do?
How do intermediaries operate?
What works best (in different settings and for different groups of people)?
What influences (positively or negatively) the work of different intermediaries in infection control?
How does policy translate into practice in infection control?

Table 3.5: Stakeholder group meetings set of questions

3.9 Stakeholder group findings

Following the stakeholder meetings, the data were analysed to capture the information which focused on each of the questions:

Questions for review	Findings	Realist questions
<p>How do intermediaries operate?</p> <p>What do people in identified roles do?</p>	<p>Intermediary examples ranged across a broad spectrum of roles and responsibilities. These included: ward managers, link nurses, clinical educators, infection control nurses, patient champions, and sometimes, patients. There was agreement that infection control should not be the sole responsibility of link nurses.</p> <p>Roles were generally described as being formal. Intermediaries use influencing skills, are good role models, are enthusiastic, challenge poor performance, have good time management, and ensure information flows.</p>	<p>How do intermediaries change the reasoning or behaviour of others to promote best practice in infection control?</p>
<p>What influences the work of different intermediaries in infection control?</p> <p>How does policy translate into practice in infection control?</p>	<p>Influencing factors discussed included international and national campaigns to reduce the rates of HCAs, and the role of the media. Organisational factors included the challenges of managing new staff, cultural perspectives, and workforce structures. Monitoring performance and ways of challenging individual practice emerged as key priorities for stakeholders in leadership and manager roles, who were cognisant of different approaches and attitudes that individuals take toward infection control. Stakeholders highlighted that use of policy, organisational directives, and targets, were key to influencing the actions of different individuals (i.e. clinical staff)</p>	<p>In which circumstances?</p>
<p>What works best (in different settings and for different groups of people)?</p> <p>Can you provide examples of interventions which promote best practice in infection control?</p>	<p>Rotating audits between different staff, unannounced inspections, ensuring audit results being relayed to all staff.</p> <p>Seniority level of intermediary. Empowering different levels of staff e.g. healthcare support workers.</p>	<p>What works, for whom?</p>

Table 3.6: Stakeholder group findings and realist review questions

3.10 Searching the evidence

The next step of the realist review was to search the evidence to reconstruct the programme theories about the ‘intermediary’ and what works to promote best practice. As Pawson (2004: 7) states; “the realist approach always begins by trying to identify programme mechanisms and by discovering exactly what it is about an initiative that works”. In other words, evidence that shows the successful functions of different interventions are initially where attention is focused (Pawson, 2004). The review was intended to provide better understanding about the concept of the intermediary, and pull together rudimentary ideas of how different intermediaries have the potential to be successful, contributing to the development of the underlying programme theories (Pawson & Bellamy, 2006; Kastner et al, 2011). Pawson (2002:344) suggests that the realist reviewer is initially concerned with seeking “families of mechanisms”; hence consideration was given to different sources of evidence in this review. In contrast to the approach taken in a traditional Cochrane type systematic review, Pawson (2002) argues that examining programmes from different disciplines illuminates the workings of the underlying programme.

The process of conducting a realist review is not linear (Wong et al, 2013). Therefore, the evidence search was iterative and was revisited throughout the course of the study to ensure that relevant documents were not missed (Jackson et al, 2009). The initial and additional search results are reported in section 3.10.6. Complex social interventions can comprise of multiple elements, and for a realist reviewer, the enormity of the task should not be underestimated. For Pawson (2006) this warrants a pragmatic approach to decision-making, as it is difficult for a single evidence review to include all areas relating to the phenomenon under study. For this review, although the specific focus was to understand the potential impact of the intermediary to promote best practice in infection control, it was anticipated that this focus would be greatly informed by more general evidence about the intermediary and the potential to promote best practice (Pawson, 2013). Pawson (2006) advocates that the development of the review runs alongside a set of questions to encourage specific focus. The questions are formulated around middle range theory about what works (in this study, the questions were developed from stakeholder engagement process), at a suitable level of abstraction to enable identification of relevant data across a range of sources (Pawson, 2006). The questions were designed to seek the

initial programme theories, using evidence to illuminate what works, and to understand the contexts, mechanisms and outcomes that show how intermediaries can be successful to promote best practice.

For Pawson (2006), the aim of the search process in a realist review is to extrapolate information from different evidence sources to illuminate the review questions and contribute to the reconstruction of programme theories (Hewitt et al, 2012). Pawson (2004) describes how an in-depth exploration of the theories uncovered through the review is required, to provide specific answers for the review questions. It is important to maintain consistency during the review process (McCormack et al, 2007). For this study, the means undertaken to ensure consistency through the selection and appraisal, analysis and synthesis processes are outlined in the next section. The search process provides the rationale for the evidence search, and this section provides details of the sources accessed.

3.10.1 The search process

The realist review was focused on healthcare and social sciences databases. Consistent with realist principles, the search was open to different types of evidence, including research papers and 'grey' literature (Wong et al, 2013). The initial search was conducted in selected databases. These were CINAHL (Cumulative Index to Nursing and Allied Health Literature), MEDLINE via Pubmed, PSYCINFO, and ASSIA. Google Scholar was also searched. A 'snowball' process also ensued to check references cited in accessed articles. As the study progressed, references were checked through journal publication and table of content alerts. The search was limited to papers written in English. Methodological 'filters' were intentionally not used, to avoid missing any papers that could be illuminating to the review (Wong et al, 2013: 9). A keyword search of the term 'intermediary' relating to healthcare yielded limited results. Therefore, a pragmatic decision was made to start the review using the terms which described the range of roles linked with the term 'intermediary' (chapter one, section 1.2), including any identified by the stakeholder group members. The terms were considered to be the most relevant starting point for the review questions, to focus on understanding the role of intermediaries to promote best practice in healthcare (Ferguson et al, 2004: Milner et al, 2005: Thompson et al, 2006). Two papers used the term 'intermediary' to describe five distinct roles

(Ferguson et al, 2004; Thompson et al, 2006). From scrutinising these two papers, it was then possible to broaden the search using the other terms describing the key roles described in the papers (champion, facilitator, opinion leader, change agent, linking agent). The other paper of significance (Milner et al, 2005) likened the linking agent role to the clinical nurse educator, and also described the intermediary functions of clinical nurse specialists, practice developers, and knowledge brokers. Later on, an additional search using the term ‘infection control nurse’ was conducted, to ensure any specific information about this role in the domain of infection prevention and control was not missed. As Wong et al (2013) discuss, it is important that realist reviewers document additional searches. For this study, the search for information in the specific domain of infection control was important for theory building (Wong et al, 2013). Therefore the key terms were searched in conjunction with infection control to search for specific evidence. MESH headings related to the concepts were identified, then adapted to fit in with the syntax of other databases, and combined within the search, using Boolean logic operators:

Term	Boolean logic operators
Infection control	and
Champion	or
Clinical Nurse Educator	or
Clinical Nurse Specialist	or
Practice developer	or
Knowledge broker	or
Opinion leader	or
Facilitator	or
Linking agent	or
Infection control Nurse	or
Change Agent	or

Table 3.7 Search terms

3.10.2 Selection and appraisal of documents

The purpose of quality appraisal in a realist review is to unpack evidence that will help to build the initial hypotheses (Leeman et al, 2010). Pawson (2006) considers two areas of enquiry as being equally important to the process of evidence selection. Assessment of relevance ensures that the reviewer considers the appropriateness of the document by reading the full text and judging papers on their unique contribution to the review (Pawson, 2006). For a realist reviewer, assessment of rigour means assessing the quality of the papers, not under the strict criteria normally associated with Cochrane type systematic reviews, but to seek any “trustworthy nuggets of information to contribute to the overall synthesis” (Pawson, 2006: 90). For this study, this translated as documents (or sections within selected documents) which reconstructed the underlying programme theories (Pawson, 2006: Pawson, 2013). Therefore, evidence which would normally be excluded from the traditional Cochrane type systematic review was included in the review.

3.10.3 Inclusion criteria

1. Evidence from national and international papers which have described, evaluated and/or analysed different intermediary interventions in infection prevention and control
2. Papers written in English
3. For infection control, papers published after 2003 to coincide with the publication of ‘Winning Ways’(DoH, 2003) which, as described in chapter one (section 1.10.2) was a pivotal document signifying the changes that were required in order to bring infection prevention and control to the forefront of healthcare practice.
4. Evidence from healthcare, social and behavioural sciences

3.10.4 Data Extraction

The review questions were used to determine the relevance of documents, or sections within the documents, to the review. A data extraction form was devised to provide a methodical process to reviewing the selected documents, extract relevant data, and focus attention on the question areas (Appendix 3.5). Using the data extraction form

ensured that attention was focused on eliciting any information that would illuminate the review questions (Jackson et al, 2009). The form was also useful to ensure any information pertaining to the infection control domain was captured. For this study, the development of the form was guided by the templates provided by Dielman et al (2011) and Rycroft-Malone et al (2012).

3.10.5 Analysis and synthesis process

According to Rycroft-Malone et al (2010), synthesis in a realist review focuses on four elements, and these were considered through the review process. For this study, questioning the integrity of a theory involved judging the strength of the evidence presented. Adjudicating between competing theories was addressed by reporting any evidence which presented contrasting theories. Considering the same theory in comparative settings involved being cognisant of the different contexts or location of studies or evidence presented. Comparing the 'official' theory with actual practice involved judging the applicability of the theories within the reality of healthcare practice. Wong et al (2013) use relevance and rigour as the criteria for selecting documents in realist reviews. Relevance refers to the ability of the data to make a contribution to the programme theory development. Rigour refers to the reviewer's judgement of the credibility of the data.

The synthesis of the evidence extracted from the search process was focused on answering the review questions developed from the stakeholder meetings. Therefore, evidence was included from documents reporting on different intermediary initiatives if they illuminated the impact of intermediaries in infection control in any way, if contextual conditions were described, and if the underpinning mechanisms were articulated. As mechanisms are often described as being invisible (Pawson, 2013), the skills and characteristics associated with different intermediary roles were examined in the selected documents, in order to seek any information that could show the underlying mechanisms. The aim of this process was to seek the theories to explain the ways mechanisms lead to certain outcomes, and to understand the contextual conditions that can impact on the success or failure of the mechanisms (Wong et al, 2013). The next section reports on the search results and the main findings of the review, guided by the review questions.

3.10.6 Search results

For the search, 232 documents were found (Appendix 3.6). Titles of documents, and abstracts where available, were firstly scrutinised online. Documents considered relevant within the boundaries of the inclusion criteria were saved and reviewed. At this stage, documents were excluded if they did not meet the principles of the inclusion criteria. For example, documents which were concerned with public health, or those which did not refer to the search terms in the title or abstract. Following reviewing the titles and/or abstracts, twenty seven documents were retained as they appeared relevant to the specific search. Full texts of the documents were retrieved. Extraction of full text documents reduced the search to a total of sixteen documents. Further scrutiny of the full text documents for information pertaining to the review questions reduced the number of documents for the review to four. At this stage, although some documents referred to intermediary interventions, there was insufficient details about interventions, process or outcome evaluation, that would provide any contribution to the review. The following figure illustrates the search process strategy:

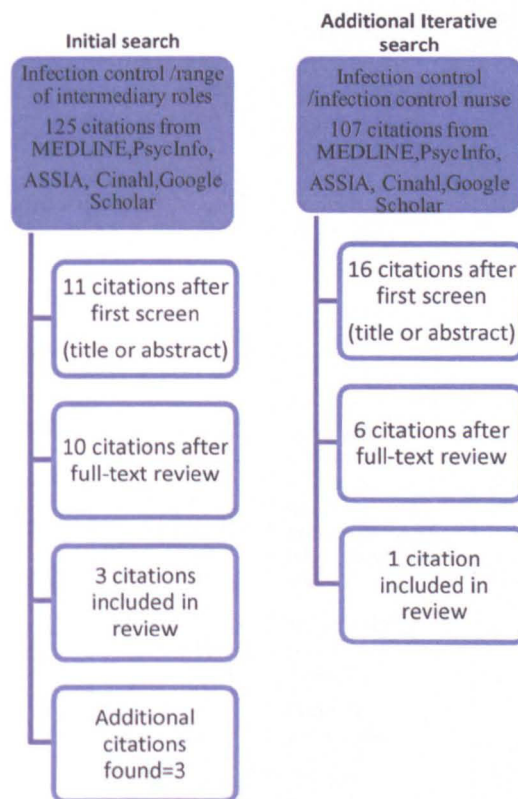


Figure 3.1: Search results flow diagram (from Wong et al, 2013)

An additional three documents were found by snowballing and added to the citations included in the review. The objective of the next stage was to reconstruct and refine the programme theories through scrutinising the findings of the review (Walshe & Luker, 2010; Pawson, 2013). Thus, the study of the chosen documents was guided by the review questions, to elicit supporting evidence or consider any refuting statements. The nature of the documents that were extracted from the search process lacked methodological consistency. For example, several of the documents chosen for the review were reports. However, this is not a requirement of realist reviews (Jackson et al, 2009). In a realist review, the objective is to search the evidence for any information that will contribute to developing the programme theories. The final documents included in this review are collectively summarised in the table below. The additional papers found by chance are marked with an asterix:

Title of document	Aim	Approach	Participants	Data analysis	Main findings
*Barry, D. & Carter, Y. (2010) Developing Satellite Roles in Infection Prevention Teams to Fulfil Responsibilities. <i>Nursing Times</i> 13 September. Retrieved from: www.nursingtimes.net	To report on the introduction of satellite roles for infection prevention and control in one NHS Trust in the UK. The satellite roles were designed to complement the CNS roles to promote best practice in infection control.	Report paper to highlight development of satellite roles to complement existing infection control resources in light of government targets.	7 satellite roles were developed. No empirical data collected.	No detail provided –paper did not report empirical data.	The authors allude to how satellite roles in infection control improve reduction in number of HCAIs, instil confidence in how patients perceive their care, and support CNS roles.
Damschroder, L. J., Banaszak-Holl, J., Kowalski, C.P., Forman, J., Saint, S. & Krein S.L. (2009). The Role of the "Champion" in Infection Prevention: Results from a Multisite Qualitative Study. <i>Quality and Safety in Health Care</i> 18 (6), 434-440	To explore the types and numbers of infection prevention and control champions in the US. To elicit the impact of champions to successful change.	Multisite mixed methods study. Qualitative approach for this arm of a larger study which included quantitative data collection by survey methods. 14 hospitals approached to explore barriers and enablers for infection control prevention implementation strategies. Hospitals chosen were stratified	Qualitative analyses of telephone interviews with 38 participants at 14 hospitals in phase one. 48 participants from 6 hospitals on phase two. Total: 86 participants Participants were chosen if they played a pivotal role in implementing	Ongoing study data analysis with coding based on the conceptual framework using Rogers' diffusion of innovation. Nvivo 7 was used to organise the data. Coding of data was followed by further analysis through group consensus.	4 main themes emerged from the data that showed intervention success or failure The impact of champions to successful change, described as technology focused and behavioural.

		according to Veteran Affairs/non- Veteran Affairs.	preventative practices.		
*Edden, A.C. & Willan, J.L. (2009). A Local Response to Implementing Saving Lives in a Large Acute Trust. <i>British Journal of Nursing</i> 18(18), 1138-1142	To report on an initiative to introduce five practice improvement facilitators in one NHS Trust in the UK. Steering group was established, comprising of clinical and managerial staff.	Practice improvement initiative and evaluation report. Gap analysis initially undertaken to establish current practices. Root cause analysis of MRSA cases undertaken for 12 month period. Review of relevant documentation, for example cannula and catheter charts.	Five facilitators drawn from different clinical backgrounds, for example, emergency department, coronary care, paediatrics, cardiothoracic intensive care. Each facilitator allocated clinical areas to focus attention.	No empirical data collection. However, prevalence audits undertaken during period of interventions which included introduction of facilitators.	The facilitators focused on specific clinical areas, and developed e-learning packages for staff. Prevalence audits found reduction in use of cannulae, Department of Health inspection found 100% compliance with relevant documentation following introduction of initiatives including facilitators.
Lewis, T., & Edwards, C. (2008). How Clinical Champions can Improve Quality. <i>Nursing Management</i> 14(10), 24-7	To report on an initiative in one NHS Trust in the UK to introduce clinical champions for infection control. The document describes the support provided for the clinical champions. However, no empirical data reported to evaluate the initiative.	Initiative and evaluation report. Initiative preceded by workshops, with rolling programme of assessment and clinical competency education provided for clinical champions.	Clinical ward managers/deputies identified for initiative. Total number not provided. Champion participants took part in evaluation of initiative but no empirical data reported.	Evaluation of initiative involved views of champions, but the paper does not specify how reported.	Results showed a reduction in MRSA rates following introduction of the initiative. Anecdotal evidence of improved practices and improved confidence levels of clinical staff. Anecdotal evidence of patient feedback to support champion initiative.
*Miyachi, H., Furuya, H., Umezawa, K., Itoh, Y., Ohshima, T., Miyamoto, M. & Asai, S. (2007). Controlling methicillin-resistant <i>Staphylococcus aureus</i> by stepwise implementation strategies in a university hospital: impact of a link-nurse system on the basis of multidisciplinary	To report on a link nurse initiative in Tokyo University Hospital over 76 month period.	Retrospective study of MRSA rates and influence of preventative strategies including link-nurse initiative. Quasi-experimental design.	60 senior clinical nurses undertook education to provide linkage role in clinical areas. Full-scale activities in place in 2001 onwards.	Retrospective analysis of MRSA rates and implementation strategies. Hand-hygiene compliance analysed by measuring use of liquid soap, found significant increase in use	Infection control link nurses implementation found a significant reduction in MRSA rates. The mean monthly MRSA rates were found to improved following

<p>approaches <i>American Journal of Infection Control</i> 35(2), 115-121.</p>		<p>The link –nurse strategy supported other preventative strategies and provided; “linkage of existing and essential measures: feedback processes and classical advocates such as preventative guideline and hand-hygiene compliance”</p>			<p>introduction of strategies inclusive of link-nurse initiative.</p>
<p>Roberts, C. & Casey, D. (2004). An infection control link nurse network in the care home setting <i>British Journal of Nursing</i> 13(3), 166-170.</p>	<p>To provide information on the infection control link nurse, and to describe an initiative in the North Wales area where a link nurse network was established.</p> <p>The independent sector context is discussed.</p>	<p>Descriptive document providing scope of the link nurse literature.</p>	<p>65 link nurses were established in 47 care homes.</p> <p>Link nurses attended 5 day course before commencing in the role.</p>	<p>Self-audit tool issued to all care homes bi-annually measures effectiveness of link nurse initiative, but no details provided.</p>	<p>Evaluation of link nurse network initiative recommended but not provided. The report implies that practice has benefitted by the introduction of the link nurse initiative.</p>
<p>Saint, S., Kowalski, C., Forman, J., Damschroder, L., Hofer, T.P., Kaufman, S.R., Crewell, J.W. & Krein, S.L. (2008). A Multicenter Qualitative Study on Preventing Hospital-Acquired Urinary Tract Infection in US Hospitals. <i>Infection Control and Hospital Epidemiology</i> 29(4), 333-341</p>	<p>To promote better understanding of how hospitals in the US manage the prevention of hospital acquired urinary tract infection. One intervention included the use of committed champions.</p>	<p>Research study using both quantitative and qualitative methods. Multicentre study</p> <p>38 semi-structured telephone interviews</p> <p>39 in-person interviews to search for themes to show how hospital acquired urinary tract infections are addressed in the US.</p>	<p>Purposeful sampling used to identify key staff in hospitals which used UTI prevention strategies.</p> <p>Snowballing was used to identify participants who could contribute to the study.</p> <p>Interview guide devised and used about preventative practices. Participants included managers and clinical staff.</p>	<p>The study reports using rigorous qualitative methods to analyse data.</p> <p>Data analysis conducted at same time as collection.</p> <p>Qualitative codebook developed. Codes refined through transcripts. Nvivo software used to manage large data set.</p>	<p>Results found that, where champions were used, UTI prevention practices were facilitated more positively.</p>

Table 3.8 Summary of selected documents chosen for review

3.11 Main Findings

The purpose of the review was to address the review questions, and clarify the particular contribution of the intermediary to the multi-faceted approaches that are currently being used in infection control to promote best practice (Gardam et al, 2009). Documents were read to search for any snippets of information that would answer the questions set in the data extraction form (Dieleman et al, 2011; Rycroft-Malone et al, 2012). The review included a small number of documents which purported to describe the roles of different intermediaries in infection control, operating in different settings. Data analysis was conducted manually (Dieleman et al, 2011). The following section describes the findings from the synthesis process, through considering the information extracted from the documents. The findings section is structured according to the issues that emerged from the data which resonated across the documents, and these are reported below as themes, followed by an in-depth synthesis of the evidence:

- Origins of the roles
- Purposes for developing different intermediary roles
- What factors influence how intermediaries operate
- How different intermediaries influence others
- The impacts of intermediary interventions

3.12 Origins of the roles

3.12.1 Strategy/policy

The evidence shows that the origin of different intermediary roles is generally policy or problem driven. In the infection prevention and control domain, factors which led to the focus on intermediary roles included national implementation of statute and policy to ensure cleanliness standards across organisations, supported by mandatory inspections and audit. In the US, the evidence reflected the recognition that prevention and surveillance decisions by different hospitals were influenced by public reporting and directives (Saint et al, 2008). Additionally, in the UK based documents, there was evidence to show how intermediary roles were constructed or developed in response to national or local infection control strategy. This finding

was reflected in a number of documents which highlighted how the responsibilities placed on healthcare organisations ensured how infection prevention and control issues were prioritised to meet legal requirements, and also to address media scrutiny (Eddan & Willan, 2009). Saint et al (2008) highlighted that UTI prevention and surveillance decisions by different hospitals were influenced by public reporting and directives.

The influence of national policy, including mandatory collection of data and audit, was found to be instrumental to the development of different intermediary roles (Barry & Carter, 2010). As a national strategy in England, the focus of Saving Lives on care bundles for clinical procedures appeared to be a significant trigger to developing new intermediary roles (Edden & Willan, 2009). Evidence showed that the pressure on organisations to undertake mandatory surveillance of infection control data, based on the requirements of statute and policy, was shown to be behind arguing for dedicated linking roles (Barry & Carter, 2010).

In other documents, the development of different intermediary roles were conceived in response to particular infection control problems, as opposed to strategic decisions. For example, where levels of MRSA bacteraemia were found to be unusually high, this led to recommendations to introduce clinical champions into organisations (Lewis & Edwards, 2008).

3.12.2 How roles are organised

Most selected documents discussed the origins of the intermediary roles, and evidence was presented to report how roles were organised; for example, clinical managers in senior ward roles (Miyachi et al, 2007; Lewis & Edwards, 2008). In one study, intermediaries were identified during data collection by asking participants to identify; “people who played a major role in implementing a practice” (Damschroeder et al, 2009: 435). In most documents, nurses were reported to be in intermediary roles (for example, Roberts & Casey, 2004; Miyachi et al, 2007; Edden & Willan, 2009; Barry & Carter, 2010). Conversely, Saint et al (2008) found evidence to show the origins of physician as well as nursing intermediaries. Saint et al (2008: 337) emphasised the preventative activities of intermediaries to support the efforts to reduce the rates of HCAs, whilst implying that intermediaries are better placed to influence practice if they can “spearhead” preventative projects.

In summary, there was a degree of consensus about the origins of intermediary roles, reacting to strategic or policy implications, to problems relating to local infection rates, or to lack of compliance with implementation guidelines.

3.13 Purposes

3.13.1 How they worked

One issue found to contribute to the development of intermediary roles was general lack of compliance with infection control guidelines by clinical staff. For example, Damschroeder et al (2009) found a lack of implementation of guidelines to prevent and reduce the rates of ventilator-associated pneumonia (VAP), and central line-associated bloodstream infections (CLABSI) in hospitals across the US. The exposure of lack of attention to recommended practices led to a study to explore the types and numbers of infection control champions in hospitals across the country (Damschroeder et al, 2009). In another example of poor compliance, Lewis and Edwards (2008) found a lack of attention to documenting clinical interventions by staff, which had an impact on how infection prevention and control procedures were reported. Elsewhere, where patient groups were identified as being particularly vulnerable to HCAs, this was reported as being the instigating factor for establishing the need to develop intermediary roles. For example, Roberts and Casey (2004) established that nursing homes in the North Wales region at the time of their report had responsibilities for 2650 residents, who could potentially be more susceptible than the general population to the risks associated with healthcare associated infections. Saint et al (2008: 338) also found that financial incentives provided by organisation, supported the success of the champion role described in their paper, through the provision of monetary incentives for staff who took part in preventative projects to reduce the rates of HCAs, an idea described as “goal-sharing teams”.

3.13.2 Advocate for high standards

A number of documents identified that the purpose of intermediary roles were designed to ensure that advocates for high standards of infection control were present in clinical areas. For example, describing the purpose of developing clinical champions, Lewis and Edwards (2008: 26) reported that; “this initiative required that

key members of staff advocate and champion consistently high clinical standards in their areas, and consequently, throughout the organisation". Moreover, Roberts and Casey (2004:196) also used the term advocate to describe the purpose of the link nurse role in care homes. According to the authors, the intention of the role was to; "advocate and monitor the use of infection control guidelines in practice, assist the education of staff, particularly in audit, contribute to infection control surveys and attend bi-annual link nurse meetings" (Roberts & Casey, 2004: 169).

3.13.3 Implementation

In other evidence, the emphasis on implementation of organisational policy or procedures was purported to be the reasoning behind the development of intermediary roles (Lewis & Edwards, 2008). In the paper by Edden and Willan (2009), facilitators were designated to lead on high impact intervention or care bundle, and their responsibilities included teaching and education for clinical staff, including through the development of an e-learning package. In another of the UK based papers, the purpose of developing different intermediary roles was reported as ensuring the provision of support for infection control teams (Barry and Carter, 2010). Conversely, the US based papers describe different purposes. For example, intermediary role-holders were thought to be responsible for; "developing innovative ideas" (Saint et al, 2008: 337), or to carry out reconnaissance type activities to comply with infection control policy, such as hand hygiene adherence (Miyachi et al, 2007).

In general, there was little agreement on the purposes of different intermediary roles, alluding to the lack of general guidelines about what intermediaries actually do. However, evidence found that the purpose of infection control intermediaries were generally twofold. There was some consensus in the evidence that intermediaries provide support and education for clinical staff, whilst concurrently carrying out activities which are designed to enforce organisational policy and guidance.

3.14 Factors which influence how intermediaries operate

3.14.1 Provision of education/training for intermediaries

Most of the documents included in the review provided some evidence about the factors which influenced how different intermediaries operated. There was evidence that the provision of education or training influenced the intermediaries' potential to be successful, and that specific levels of knowledge were deemed to be important (Roberts & Casey, 2004). In their paper reporting on the introduction of infection control link nurses for care homes, the role-holders were initially invited to workshops to develop the skills that were considered to be important. In their paper reporting on the introduction of clinical champions into one NHS organisation, Lewis and Edwards (2008) suggested that the provision of education consequently enhanced the champions' ability and confidence in clinical areas. To support this, the champions had dedicated time to develop practice initiatives, and the provision of work based coaches was made available to them.

However, there was concern located elsewhere that different intermediaries were not able to be effective if adequate attention was not allocated to their educational needs (Barry & Carter, 2010). Provisional education for the intermediaries in the form of workshops or training was also considered pivotal in other documents (Roberts & Casey, 2004). Further, ensuring that the intermediaries were updated regularly was perceived as an influencing factor for their success (Roberts & Casey, 2004). Conversely, other documents failed to refer to the significance of education or training for the intermediary role (Miyachi et al, 2007: Saint et al, 2008: Edden & Willan, 2009).

3.14.2 Position within the organisation

The ways in which different intermediaries used their positions within the organisation was emphasised by Saint et al (2008), who suggested that champions used their position of authority and respect to achieve their aims of preventing HCAs across clinical areas. In this way, the paper suggests that the intermediaries were allowed to take ownership of the problem within the organisational context, because they were often "highly placed" (Saint et al, 2008: 337). The level of seniority within organisations of role-holders emerged as another factor thought to

influence how intermediaries operated. In the paper by Lewis and Edwards (2008), the champions were chosen on the basis of their seniority at ward manager level. However, the reasoning behind this choice was not reported. Saint et al (2008) found that hospitals which were identified as prioritising the prevention of HCAs used champions in non-physician as well as physician roles. Conversely, in the projects reported by Roberts and Casey (2004) and Edden and Willan (2009), intermediary roles were implemented at a clinical level, alluding to the emphasis on the clinical credibility of the role-holders. Edden and Willan (2009) found that nursing (as opposed to physician) champions operating at clinical level were more effective in infection prevention practices. There was no consensus found in the level of input of intermediary roles across organisations which; “may also vary greatly, ranging from minimal personal input to a significantly broader role” (Roberts & Casey, 2004: 168).

3.14.3 Impact of geographical boundaries

Where the potential success of different intermediaries were reported, the differences in the extent of their responsibilities across geographical boundaries also highlighted the lack of consensus about numbers and the capacity of intermediaries to influence practice. In the paper by Lewis and Edwards (2008), the champion initiative was a fairly limited project with senior nurses across one NHS Foundation Trust hospital being invited to participate that had responsibilities for 1,200 acute beds. In contrast, in the US, Damschroeder et al (2009) described the impact of an infection control champion initiative across fourteen hospitals, both Veteran Affairs and non-Veteran Affairs in the US. In the UK independent sector, a link nurse initiative was established within homes across a largely dispersed geographical area which led to challenges in maintaining progress and monitoring the success of the initiative (Roberts & Casey, 2004). In the study by Miyachi et al (2007), the tertiary hospital in the US chosen, providing services for general and specialist care, had 1133 beds. The authors report that, due to the nature of the tertiary hospital, with high levels of immune-compromised patients, individuals were often identified as being at higher risk of healthcare associated infections. An improvement facilitator intervention reported by Edden and Willan (2009) was based in one large NHS organisation in the UK, using five facilitators to operate across four hospitals. Overall, the evidence presented showed disparity between the numbers of role-holders of different

intermediary projects, and how geographical boundaries influenced how they operated to promote best practice.

3.14.4 Influence of pre-existing relationships

Pre-existing relationships within healthcare systems were considered to influence the impact of different intermediaries (Damschroeder et al, 2009). Behaviour change was more likely where there was evidence of “highly effective working relationships” in the settings in which the champions operated, and individual resistance to change and styles of leadership were identified as constraining factors for the success of the champion initiative (Damschroeder et al, 2009: 436). Barry and Carter (2010:2), described how; “it was important that the roles were clearly defined and boundaries drawn between the ICN role and others, to avoid confusion about responsibilities”. Moreover, the impact of different intermediaries being integrated into existing infection control teams was identified as an important element for consideration (Barry & Carter, 2010). Saint et al (2008: 337) also described how pre-existing relationships amongst colleagues facilitated the ability of intermediaries to support each other at different levels, for example; “the physician champion gained the support of nurse managers, who then became the unit-level champions”. Across the evidence presented, there was consensus that intermediaries were placed to support the function of the existing infection control teams (Barry & Carter, 2010).

3.14.5 Personal characteristics

Several of the documents alluded to different personal characteristics of intermediaries which were thought to contribute to how they influenced practice. According to Saint et al (2008), intermediaries were successful because; amongst other factors they were persuasive and passionate about their projects, and showed enthusiasm for improving patient care (Damschroeder et al, 2009). In another paper, this was described by Roberts and Casey (2004: 166) as an; “expressed interest in a specialty”. Saint et al (2008) also used the words; “aggressive” and “strength”, to imply how intermediaries acted to prevent HCAs, implying that strong personal characteristics were important. In other papers, the confidence of intermediaries was considered crucial, especially where challenging practice was in question (Roberts & Casey, 2004).

Saint et al (2008: 338) found that the impact of the nurse champion to be successful in changing practice was strengthened by the ways in which they exuded power, in contrast to where they were found to be deferential to other clinical staff. To illustrate this, in this excerpt, a project nurse coordinator is describing the actions of a clinical nurse manager champion; “you see how powerful she is, and she will not take ‘no’ for an answer, as far as getting that Foley out...Can we (those of us not on that unit) have that power? Not always, no”.

In general, being proactive was noted to be a significant factor for intermediary success (Roberts & Casey, 2004). In their study, Damschroeder et al (2009: 438) described the “intrinsically motivated” characteristic of the intermediary which had the most impact on practice. In summary, there was general consensus that different intermediaries have to be strong individuals, be adaptable, and who often have be able to manage working; “under the radar” (Damschroeder et al, 2009: 439).

3.14.6 Ways in which information is disseminated

Evidence was presented in the documents to show the significance of ways of disseminating information as being pivotal to intermediary success. Roberts and Casey (2004) suggested that the success of the link nurse framework was augmented by the education they provided for clinical staff, and the ways in which they communicated and disseminated information. This finding highlights the importance of the underlying knowledge and proficiency of the intermediaries themselves. Edden and Willan (2009) referred to the impact of the drop-in sessions facilitated by the role-holders, which enabled clinical staff to engage with the Saving Lives strategy.

3.14.7 Resistance to change

The paper by Damschroeder et al (2009: 436) was illuminative in showing how intermediary interventions encountered different lines of resistance. Where the champions were concerned with implementing behaviour change, the difficulties associated with this was ironically described as; “corralling cats”. Champions who were attempting to implement technological changes were constrained by new technology if it was substantially different from that being used (Damschroeder et al, 2009). Additionally, the financial cost of technological change proved to be barriers

to the success of the champions, regardless of their position in the organisation (Damschroeder et al, 2009).

3.14.8 Organisational culture

Found in particular in the study by Damschroeder et al (2009: 438), the influence of conducive organisational culture was considered to be crucial to the success of intermediaries for infection control, described as; “highly connected organisations (one in which health professional relationships are encouraged and established) created an environment that encouraged champions to rise up and build partnerships that were needed to implement a new practice”. One other factor worth reporting was the impact of organisational support on the success of the champions to promote best practice in the study (Damschroeder et al, 2009). Where examples of collaborative working across professions and levels of seniority within the organisation were cited, physician champions were able to facilitate behaviour change more effectively through the use of “multifaceted support” (Damschroeder et al, 2009: 437).

3.15 How intermediaries influence

3.15.1. Education and assessment

There was evidence to show the ways in which different intermediaries were considered to influence practice, including through the provision of education and assessment of competence of clinical staff (Barry & Carter, 2010). Saint et al (2008) found that the educational role of the champions was used to reduce the use of urinary catheters in US hospitals. Edden and Willan (2009) found that the teaching and assessment element of the facilitator roles were integral to their success. Lewis and Edwards (2008) reported that champions took on the role of assessing the competencies of colleagues for five identified clinical procedures (for example, urinary catheterisation). Elsewhere, the development of e-learning packages for clinical staff was described as an inherent element of the intermediary role (Eddan & Willan, 2009).

3.15.2 Implement change

Generally, the evidence implied that intermediaries triggered a form of change on the part of others (Roberts & Casey, 2004). Infection control interventions designed to instigate a change were broadly described as technological, behaviour change or hybrid (Damschroeder et al, 2009). Technological changes were often led by a single champion, whilst behaviour change was described as requiring more people in champion roles (Damschroeder et al, 2009). Saint et al (2008) described the champions in their study as facilitators of change, but do not expand on the type of change they were describing.

3.15.3 Clinical element

In the documents, there was evidence to show how the clinical element of different intermediary roles was perceived as important. In particular, Edden and Willan (2009: 1142), explored the impact of facilitators who had responsibilities for directorates, explaining how their clinical role contributed to best practice; “working in clinical areas with all members of staff enabled the momentum of Saving Lives to continue and compliance with the key elements for the high impact interventions increased steadily”. Having individuals in intermediary roles in clinical areas was perceived as being instrumental to raising awareness of infection control issues (Roberts & Casey, 2004). Barry and Carter (2010) suggested that “working side by side” with clinical staff was the reason why they had an impact on clinical staff to promote the sustenance of best practice. In a similar way to the evidence presented by Edden and Willan (2009), the clinical remit of the facilitators was considered to be instrumental to their success, and provided an avenue for intermediaries to act as role models (Barry & Carter, 2010).

3.16 Impacts

Whilst the exact impact on clinicians’ behaviour or practice change was not always made explicit, there was a level of consensus across the papers to show a degree of impact. Edden and Willan (2009) concluded that investment in the facilitator initiative was successful, although there is no evidence to show how, from the clinical staff perspective. Lewis and Edwards (2008) report that the assessment framework used by the champions to assess and monitor practice resulted in an

“educational impact”, although this was not explored on the part of the clinical staff. The other outcome of the champion intervention found that the intermediaries were better empowered to challenge practice; “since the clinical champions initiative was introduced, senior staff have had the tools they need to undertake assessments. As a result, they have been empowered to challenge poor practice by all staff in all areas” (Lewis & Edwards, 2008:27). Further, clinical staff reported being more confident in their performance and anecdotal evidence from patients found that they felt reassured to know that practice was monitored by the presence of the clinical champions. The paper also referred to a change in the confidence levels of staff in their own standards of care, but does not elaborate the exact mechanism which led to this. Elsewhere, attempts to implement behaviour change required more than one champion, and success was often contingent on collaboration across boundaries, both organisational and professional (Damschroeder et al, 2009). For Damschroeder et al (2009), the provision of feedback by the champions was the motivator for clinical staff to change behaviour.

Lewis and Edwards (2008) reported that, as a result of the champion intervention, the rates of MRSA reduced from a monthly mean of five to one or two, and improvements in clinical practices were noted. Barry and Carter (2010) state that one outcome of the initiative was described as contributing to an overall reduction in the rates of MRSA infections in the Trust. Roberts and Casey (2004) suggested that evaluation of the outcomes of link nurse interventions in nursing homes was limited, but the authors allude to the potential of the role to reduce the risks of infections, based on the findings of a bi-annual infection control self-audit tool issues to all nursing homes in the North Wales areas. Miyachi et al (2007) reported one of the outcomes of the link nurse intervention as contributing to the decrease in MRSA rates, once “their activities became full-scale” (Miyachi et al, 2007: 119).

3.17 Summary of quality of evidence

In the realist review by Dieleman et al (2011), the authors provide a section which summarises the quality of the evidence. The pattern of reporting in other realist reviews shows how it is important to consider the evidence that was chosen in this review. However, as previously discussed, the quality of evidence is not always the priority in realist evaluation, and information can justifiably be included, if it is

perceived to be relevant for the review. The papers included in this review generally fell into two categories. Firstly, peer-reviewed articles provided little detail of evaluation processes (Roberts & Casey, 2004; Lewis & Carter, 2008; Eddan & Willan, 2009; Barry & Carter, 2010). Secondly, original research papers reported studies which evaluated the impact of the intermediary intervention and provided details of the methods employed (Miyachi et al, 2007; Saint et al, 2008; Damschroder et al, 2009). The evidence extracted for the review was limited due to the small number of documents which fitted the inclusion criteria, reflecting the paucity of evidence which exists to understand the potential impact of intermediaries in infection prevention and control. Further, documents were included which reported the study of multifactorial interventions to promote best practice in infection control (Miyachi et al, 2007; Saint et al, 2008; Edden & Willan, 2009), therefore it was difficult to extract the relevant information which could show the exact influence of intermediary interventions. Of the seven documents chosen for the review, it was sometimes difficult to extract the information to show what works from the quality of the evidence provided. Impacts were often implied, based on anecdotal evidence, or based on the paper authors' views of what constituted success. In sum, the literature describes activities rather than *how* exactly intermediary interventions impact on best practice.

3.18 Discussion of findings

From the documents included in the review, and the synthesis of the contents, a number of themes emerged. For Pawson (2013: 62), the themes are; “vital explanatory components”, which begin to illuminate what works, how and in which contexts. The next step of the review was to consider the findings within the broader literature so that the review could be considered in the light of the theoretical underpinnings that have defined current understanding of the intermediary. Jackson et al (2009) refer to this as an essential component to help understand the rationale behind the concepts that were uncovered through the review. Additionally, Wong et al (2013) explain that it may be relevant to compare the review findings with existing literature to ascertain the contribution of the review to different fields of evidence. For this review, the existing literature which explains the themes which emerged from the review was sought, to understand the broader underpinnings. Whilst limited, the review produced small “nuggets” of evidence to show what works, and

how different intermediaries have the potential to be successful to promote best practice in infection control. Exploring these concepts in the light of broader theory can help to illuminate the significance of the review findings.

The review found that main themes which showed the potential impact of different intermediaries to promote best practice in infection control could be considered in light of their role (origins and purpose), influences (on how the intermediaries could operate, and how intermediaries influenced practice), and impacts (on practice and individuals). These three key areas are now used to structure the discussion of broader literature, and consider to what extent the findings of the review resonate with, or disputes, the evidence.

3.18.1 Intermediary origins and purpose

In the review, origins of the roles were closely related to strategy and policy implementation, and some evidence was extracted to show ways in which roles were organised. The review found the origins of the different intermediary roles were contingent on organisational strategy and policy, or responses to problems such as local infection outbreaks. Advocating high standards and implementing policy were two examples of intermediary role purposes cited in the review, and desired change through intermediary interventions were broadly discussed as technical or behaviour (Damschroeder et al, 2009). In the broader literature, the desired “technical competence” of the early product champion is thought to contribute to the view of the champion’s profile as credible experts with powers of persuasion (Chakrabati, 1974: 61). However, Damschroeder et al (2009) found that champions in infection control often struggled to implement technical change, and the process was described as being long and arduous. In the wider literature, it is established that intermediaries use specialist knowledge and competence to educate others, provide guidance and act as information sources (Milner et al, 2006: Thompson et al, 2006: Doumit et al, 2007). Different intermediaries are believed to act as change agents, with authors describing their functions as, for example, to; “implement a change in practice”, or “advocate new ideas, products, projects” (Thompson et al, 2006:694:695). However, the wider evidence base often lacks detail to show the reasoning, on the part of different organisations, behind developing or introducing intermediary roles.

3.18.2 Influences

Provision of education and training for intermediaries was considered to be important for some intermediary programmes, but the theme was not noted to be consistent across all papers included in the review. Being knowledgeable is a recognisable advantage when it comes to persuading others to take up an innovation or consider a change in practice (Chakrabati, 1974). However, the broader literature fails to provide more evidence to support how intermediaries contribute to promoting best practice by being better informed through education or training.

Although there was no consensus about the level of input of different intermediary roles within organisations, the theme of position within the organisation was not clear across the papers. The findings of the review about the level of seniority within organisations of different intermediaries are interesting when examined in light of broader evidence. In an exploration of the best champion for the patient safety arena, Soo et al (2009) conducted a multisite case study of champions within rapid response team initiatives. The study was focused on two acute care settings which had recently introduced the rapid response initiative to respond to emergency situations within the hospital setting. The study found that champions used their influence, either managerial or clinical, to advance implementation of the initiative. Management level champions were found to consistently support the work of champions at other levels, for example, peer level or clinical champions (Soo et al, 2009). However, the papers chosen for the review purported that intermediaries were often nominated on the basis of their seniority, as opposed to nomination on the basis of personal characteristics, which can then be nurtured and developed (Soo et al, 2009). In the review, the evidence disclosed the potential of peer level, or clinical intermediaries, to influence or change the reasoning or behaviour of others. For the infection control domain, where management level or expert intermediaries are often deployed, the findings from the broader literature highlight the potential of intermediary roles which can transcend across different levels.

In the review, there was consensus that the intermediaries who were discussed in the review were generally internal to the organisation. Internal models of intermediaries is an approach supported by Schon (1963), who initially perceived the champion as being situated within the organization, dismissing the potential benefits of bringing

in or hiring external champions. Schon's (1963) early vision of champions was based around individuals cognizant of the organisation's working ways, with understanding of the social systems and networks within, and the ability to promote their own knowledge and ability to push forward innovation and change. However, in contrast to the findings of the review, where roles were noted to transcend levels of seniority within organisations, Schon (1963) argued that successful champions need to occupy a strategic position within the organization, so that they are listened to, and where their skills are valued. That the intermediaries examined in the review were internal to the organisation might explain why they were generally noted to be accepted by stakeholders, and where conducive pre-existing relationships in clinical areas were also noted to facilitate the intermediary role, this enabled the intermediaries to tailor their strategies appropriately (Chakrabati, 1974).

In the literature, some authors refer to the degree of formality or informality that different intermediary roles possess. In the review, the intermediary interventions described formal appointments of nursing or physician staff. For Rycroft Malone et al (2002:177); the facilitator is usually an "appointed role". Milner et al (2005) describe formal roles such as clinical nurse educators and clinical nurse specialists that act as "knowledge brokers" between research and practice (Gerrish et al, 2011). However, according to Thompson et al (2006), intermediaries can operate at any level of formality. Grimshaw et al (2006) and Rogers (2003) believe that opinion leaders are essentially informal. Opinion leadership refers to the level at which an individual can favourably and consistently influence another's behaviour or attitudes (Rogers, 1995). Doumit et al (2007) report both informal and formal approaches used by opinion leaders in their attempts to influence others. Locock et al (2001), in a review of two governmental funded initiatives, failed to find evidence to support how the informality of the opinion leader shaped their success. In essence, the expert opinion leader appeared to be more successful in the knowledge translation phase of programmes (Locock et al, 2001). In terms of educational direction, there is little evidence as to which approach (formal or informal) works best in practice (Doumit & Gattellari et al, 2007), however evidence from the review found that formal approaches were most likely to be used.

In the review, papers focused on the personal characteristics thought to contribute to intermediary success. In the broader literature, intermediaries are generally described

positively, and personal characteristics that allude to how they can promote best practice have been discussed in the literature. Facilitator skills are described as; “helping and enabling” (Rycroft-Malone et al, 2002). Being respected is considered to be essential, together with other attributes such as having a positive attitude, and be able to act as a role model (McCormack et al, 2013). Champions need skills that enable them to be risk-takers, be aggressive, and powerful (Schon, 1963). This finding reflects the data extracted from the study by Damschroeder et al (2009) which alluded to power and aggressive characteristics as important influences for intermediary success. Howell and Higgins (1990) found that the ideal champion characteristics include self-confidence, persistence, energy, and risk-taking abilities, affirming the findings of the review (Roberts & Casey, 2004).

Thompson et al (2006) describe intermediaries as individual recognizing the need for change, promoting a new idea with specialist knowledge, enthusiasm, determination and passion, which is similar to some of the characteristics extracted in the review, in particular, the US based studies (Saint et al, 2008: Damschroeder et al, 2009). However, in the broader literature, it is clear that general consensus on ideal personal characteristics have yet to be agreed. For example, for physician champions, courage and social skills are prioritized as essentials (Reinertsen et al, 2007). However, in other contexts, different characteristics are considered to be more important, including powers of persuasion, advocacy, education, and building relationships (Soo et al, 2009). Persuasion theory is cited as the; “process of social influence” (Wiley-Patton & Malloy, 2004: 181), and theorist Robert Cialdini (2001) offers likeability as one way in which individual behaviour can be influenced by another. In the review, although some evidence was presented to show personal characteristics that influenced how intermediaries operate, little evidence illuminated the views of the people who they were designed to influence, i.e. clinical staff.

Influencing factors thought to contribute to the success or failure of different intermediaries referred to clinical staff knowledge and poor compliance with best practice in the literature included in the review. However, from the broader literature, success of intermediary interventions is often dependent on a combination of individual and contextual factors (Locock et al, 2001). The term context was generally used to describe geographical factors, the nature of the problem (i.e. local rates of HCAs), or the availability of resources. Lack of resources was an identified

factor, together with the recognition that there was a need to invest more heavily in infection prevention and control teams. In the broader literature, availability of equipment and economic influences has been cited by French (2005) as part of the wider contextual influences on research use.

The contextual conditions which impacted on the success or failure of intermediary interventions were not always articulated in the evidence included in the review. Generating a comprehensive understanding of contextual factors is important (Rogers, 2003; Eccles et al, 2005). As Hewitt et al (2012:251) note; “complexity is further increased by social intervention being implemented in wider social systems that immediately influence and shape them”. In the broad healthcare literature, there is consensus that the concept of “context” is complex, characterised by the fact that multiple different interpretations exist (Kent & McCormack, 2010). The significance of the impact of context on the implementation of best practice is embodied in the early work of Tarde, who recognised that the success of the knowledge diffusion process was heavily influenced by the environment (Kinnunen, 1996). Tarde postulated that certain innovations were more likely to be accepted in cultures where people and their characteristics resembled those of the innovation (Kinnunen, 1996). For this review, this theory helps to explain the significance of the internal position of the intermediary noted across the papers. In healthcare, understanding how contextual conditions impact on the success or failure of interventions to promote best practice is an evolving area. Complex systems within healthcare organisations make the identification of influential contextual factors difficult (French et al, 2009). The challenge for researchers is to unpick the influencing factors, understand how to overcome the constraining factors, whilst simultaneously nurturing those that act as enablers to promoting best practice (Lewin, 1975).

In the review, a number of extracted elements resonated with outer context, for example, individual resistance to change (Damschroeder et al, 2009), or political drivers (Edden & Willan, 2009). In the broader literature, where outer contextual factors are identified, social cognition theories can help to understand individual determinants of change and help understand individual behaviour in healthcare practice (Godin et al, 2008). Threshold models demonstrate how individuals choose to adopt a different behaviour based on how many people already adopt that behaviour (Granovetter, 1978). In this way, it is the behaviour of the majority that

influence the individual (Valente, 1996). Individuals operating within complex systems are heavily influenced by the state of the social system, in particular how conducive it is to change (Rogers, 2003). The ideal social system for promoting best practice consists of a; “culture of creativity and innovation, a relatively flat hierarchical system, and strong leadership that is committed to effecting change” (Sanson-Fisher, 2004:S56).

Literature included in the review showed that context factors are influential, for example, leadership styles (Saint et al, 2008), infection control policy and strategy (Lewis & Edwards, 2008), or the availability of resources that the organisation can offer (Barry & Carter, 2010). In the review, new technology and costs were considered to be constraining contextual factors (Damschroeder et al, 2009). In the broader evidence, Milner et al (2006) found that poor access to resources and lack of time were barriers to promoting best practice by clinical nurse educators. Milner et al (2005) also found that access to technical and educational resources by clinical nurse educators were essential criteria for success. In their review of opinion leaders, Locock et al (2001) refer to the importance of taking into account the nature of local settings and context which possess unique influences. These findings are supported by the findings of French (2005), who found that setting could be identified as a contextual factor which influenced the use of research. Reflecting the findings in the review, intermediaries’ positions within organizations enables them to impart and receive communication effectively, so that; “they are at the centre of interpersonal communication networks –interconnected individuals who are linked by patterned flows of information” (Grimshaw et al, 2006:2). Conversely, Locock et al (2001) found that opinion leaders themselves can have a negative impact on the context, especially where hostility on their part can threaten the success of different programmes.

3.18.3 Impacts

Process and outcome evaluations were largely omitted. Outcomes were largely descriptive and relied on anecdotal data. Where reduction in healthcare associated infections was claimed following the introduction of a specific intermediary programme or intervention, there were no reports of measurable outcomes. In general, outcomes were considered in terms of benefits to the individual (i.e. patients

and clinical staff), or to the organisation. In infection control, policy often refers to both cost and health outcomes (Graves et al, 2007). These are generally outlined as reduction or eradication of HCAs (Healthcare Commission, 2007: WHO, 2011a), ensuring safety for patients (DoH, 2003: ICNA, 2004), and promoting a culture whereby “prevention is everyone’s business” (House of Commons, Public Accounts Committee, 2008). The ideal outcome for infection prevention and control is set at zero infections (APIC, 2008). Two papers included in the review reported improvements in infection rates, but failed to provide statistics to support the claims (Lewis & Edwards, 2008: Barry & Carter, 2010). Intermediary job descriptions outline what is expected of specific roles to achieve strategic outcomes that address organisational policies, governed by national or international standards/legislation (DoH, 2003: WAG, 2004). However, as in the review, the broader literature provides little evidence to show exactly how these are brought about.

In general, infection prevention and control outcomes relate to the delivery of organisational strategy. In the review, impacts resulting from different intermediary programmes were generally described as educational (Lewis & Edwards, 2008), empowering staff (Lewis & Edwards, 2008), and behaviour change (Damschroeder et al, 2009). In the wider literature, building staff confidence, empowering and persuading others, and improving standards in practice are cited as impacts resulting from intermediary interventions (Doumit et al, 2007). However, outcomes are often difficult to measure, and the review papers provided little evidence to quantify the results. This finding resonates with the broader evidence. For example, the RCN (2012b) suggests that the outcomes of effective linking agents can be demonstrated in both quantitative and qualitative means at individual, workplace or organisational level, but no evidence is presented to illustrate what this means for practice.

In the opinion leader literature, there are some examples of outcome evaluations. Lomas et al (1991), in a randomized controlled trial comparing the use of opinion leaders versus audit and feedback to implement practice guidance, found that successful outcomes were related to the education provided by opinion leaders who were cognizant of the local context and culture. Social marketing strategies use opinion leadership together with other interventions to make behaviour change in practice (Wright et al, 2006). According to Grimshaw et al (2006) sociometric methods are used to measure the effects of opinion leadership. Attempts to quantify

the effectiveness of opinion leaders in healthcare literature have drawn on the approach coined by Hiss et al (1978), whereby participants elect opinion leaders, based on their perceived ability to influence others. A small number of systematic reviews have been conducted to evaluate the effectiveness of local opinion leaders (Thomson et al, 1999; Doumit et al, 2007; Flodgren et al, 2010). Thomson et al's review (1999) found only three trials which substantiated the success of opinion leaders in care processes. Doumit et al's review (2007) included twelve randomized control trial studies, mostly based in acute healthcare settings, and generally supported the findings of Thomson et al (1999). However, Doumit et al (2007) found a positive link between the presence of opinion leaders and the reduction of non-compliance in clinical practice. Whilst Flodgren et al (2010) found links between successful outcomes in promoting best practice through the use of opinion leaders combined with other interventions, they struggled to find adequate information to support the notion that opinion leaders by themselves could account for the success. Grimshaw et al (2006) argue that the current healthcare literature lacks understanding of how opinion leaders can be effective, and there have been calls for further research in this area (Thomson et al, 1999).

3.19 Summary of the review

In this realist review, the focus of enquiry was to seek to understand the potential of the intermediary to promote best practice in infection control; what works, how and in which contexts (Pawson & Bellamy, 2006). Stakeholder groups were convened to develop the initial review questions. The total number of documents found for the review was small, and there was lack of methodological consistency between papers. The variation of terms, and the way terms are often used interchangeably to describe different intermediaries added to the challenges of conducting the review. A small number of papers described different intermediary interventions in infection prevention and control, but use of terminology was not consistent, and information was often lacking to show their exact impact on the behaviour or reasoning of staff to improve practice in the clinical areas. Theories to explain the success of intermediary interventions were not used consistently across the review. However, links could be made to broader theory by considering the implied contribution of key concepts, and, where relevant, the review has made reference to these in an attempt to develop the programme theories. The review provided some information to

hypothesise the ways in which intermediaries promote best practice, and some evidence was presented to show the conditions which can influence success. Whilst the literature didn't offer any obvious mechanisms, it illuminated certain roles and activities, and a range of personal characteristics that are associated with different intermediary roles. The realist review also illuminated the constraints that can affect different intermediaries, and their potential to promote best practice.

In this realist review, the focus of enquiry was to seek the programme theories that explain the potential of the intermediary in infection control; what works, how and in which contexts (Pawson & Bellamy, 2006). The stakeholder groups were convened to develop the review questions. The total number of documents reviewed was small, and there was lack of methodological consistency between papers. The variation of terms, and the way terms are often used interchangeably to describe different intermediaries added to the challenges of conducting the review. A small number of papers described different intermediary interventions in infection prevention and control, but use of terminology was not consistent, and information was often lacking to show their exact impact on the behaviour or reasoning of staff to improve practice in the clinical areas. Theories to explain the success of intermediary interventions were not used consistently across the review. In the papers included, there was little reference to underpinning theory. However, links could be made to broader theory by considering the implied contribution of key concepts, and, where relevant, the review has made reference to these in an attempt to reconstruct programme theories. The review provided some information to hypothesise the ways in which intermediaries promote best practice, and some evidence was presented to show the contextual conditions which can influence success. The realist review also illuminated some of the constraints that affect different intermediary interventions and their potential to promote best practice.

In infection control, whilst evolving intermediary roles are considered important (Dawson, 2003; Barry & Carter, 2010), it is apparent from the review that little information details exactly the ways in which they operate most effectively. Moreover, the existing evidence lacked detail about evaluation methods. The review found a range of skills and attributes are associated with different intermediary roles, and has resulted in a clearer understanding of possible mechanisms resulting from intermediary interventions, that can trigger behaviour or practice change. The review

has highlighted the complexities in defining the impact of context within complex healthcare systems.

The review aimed to reconstruct theories which show in what circumstances intermediaries can be successful to promote best practice. Contextual conditions are important, and the review has illuminated the complexities of understanding meanings of context. In infection control, whilst evolving intermediary roles are considered important, it is apparent from the review that little information details exactly the ways in which they operate most effectively. Moreover, the existing evidence lacked detail about evaluation methods, and the exact impact on practice. The review has highlighted that gaps exist and provided justification for the next phase of the study, to seek data to develop CMO configurations that illuminate how different intermediaries promote and influence best practice. To guide the next phase of the study, an initial programme theory from the review was developed. The initial programme theory is presented in the paragraph below:

Intermediaries have the potential to promote and influence best practice in infection control through the provision of education, feeding back surveillance data, and implementing and monitoring guideline use. Their scope of influence might be dependent on operating clinically, being credible, their personal characteristics, and through relationships. Intermediaries influence (through personal characteristics, credibility, and provision of education) and provide feedback. Other broader or outer contextual factors that influence their role and function include geographical boundaries, organisational support, resources, and local leadership.

3.20 Conclusion

To summarise, this chapter has reported on the realist review, and has illustrated the ‘muddy’ elements of the realist approach. Whilst high quality evidence to show the programme theories was lacking, the review has emerged with an initial programme theory to hypothesise what works, how different intermediaries can be successful to promote best practice. A collection of evidence was accessed for the review in order to illuminate the theories that underpin how different intermediaries can be successful to promote best practice in infection control. From a detailed exploration of the chosen documents for the review, an initial programme theory has been developed. The limitations of the review, in particular, the quality of the evidence,

have been discussed. The review's findings provide a coherent pathway to the next step in this study, which is to develop context-mechanism-outcome propositions using data to reflect the views of participants about intermediaries in infection control. The findings from the case studies are reported in chapter five. The methods employed for data collection are presented in the next chapter (chapter four), to show the reasoning behind the decisions taken, and explain the process that was undertaken.

CHAPTER 4:

Methods

4.1 Introduction

Having explained the epistemological and methodological underpinnings of this study in chapter two, and reported a realist review of the literature in chapter three, attention now turns to describe the process undertaken to develop and test CMO propositions. The thesis is a realist *evaluation* of what works, to understand how intermediaries can be successful to promote best practice. The next step was to generate data through a carefully chosen method of data collection to develop and refine the theory that explains the impact of the intermediary. Chapter four provides a detailed overview of the methods that were employed in this study to collect data, and seeks to explain the relationship between the methods and the methodology.

For the process of choosing the appropriate methods for the study, it was important to stay focused on the aim of the inquiry. The first phase one of the study was focused on developing an initial theoretical framework and CMO propositions to explain what works, i.e. what contexts and mechanisms lead to specific outcomes. The second phase of the study was then designed to test and refine the propositions. In order to develop mid-range theories in realist evaluation, the choice of methods need to represent the reality of the participants' world. As Pawson and Tilley (1997: 214) explain, "evaluation is, after all, applied theory. And although we have called throughout for injections of 'theory' into every aspect of evaluation design and analysis, the goal has never been to construct theory per se; rather it has been to develop the theories of practitioners, participants and policy makers".

4.2 Methods

For this study, the methods relate to the "specific techniques of data collection and analysis available to the researcher" (Norton, 1999: 32). Before considering the suitability of different methods for this study, it was important to reflect on the use of data, and specifically its relationship with the theoretical underpinnings of a realist evaluation study. For Pawson and Tilley (1997: 83), "empirical work in program

evaluation can only be as good as the theory which underpins it". Their views are different to those of Scriven (1991) who rejected the idea that theory is essential for most evaluations, a conflict previously discussed in this thesis (chapter 3, section 2.8.1).

For Pawson and Tilley (1997) it is possible to conduct meaningful realist evaluations through conducting different cases studies using mixed methods where the purpose is to test, formulate and develop theory. The content of this chapter explains the choice of case study method. Whilst Yin's (2009) case study methods guided the study, reference is also made to the work of Stake (1995), to illustrate how different approaches abound which provide useful guidance for researchers. Whilst different approaches to evaluation can be informative to explain the outcomes of different interventions (Robson, 2010), the realist evaluator searches for answers to 'why' programmes or interventions impact in certain ways (Robson, 2010).

The reporting of the processes undertaken to ensure that ethical considerations were addressed is provided in this chapter. The sampling method and the choice of data collection methods are outlined. The methods used in the case studies were face to face semi-structured interviews, unstructured observations and documentation review. The process employed to analyse case study data is reported. Ensuring the rigour of the study was imperative throughout, and the strategies undertaken are discussed.

4.3 Tailoring the design for realist evaluation studies

Realist evaluation follows a specific pathway of inquiry, according to Pawson and Tilley (1997: 84), who state that 'theories are framed in abstract terms and are concerned with the identification and explanation of regularities'. According to Pawson and Tilley (1997), data collection is required in a realist study to understand the particular elements within programmes or interventions, and thereby understand the contextual condition which fire mechanisms, and how this dyad leads to certain outcomes as illustrated below:

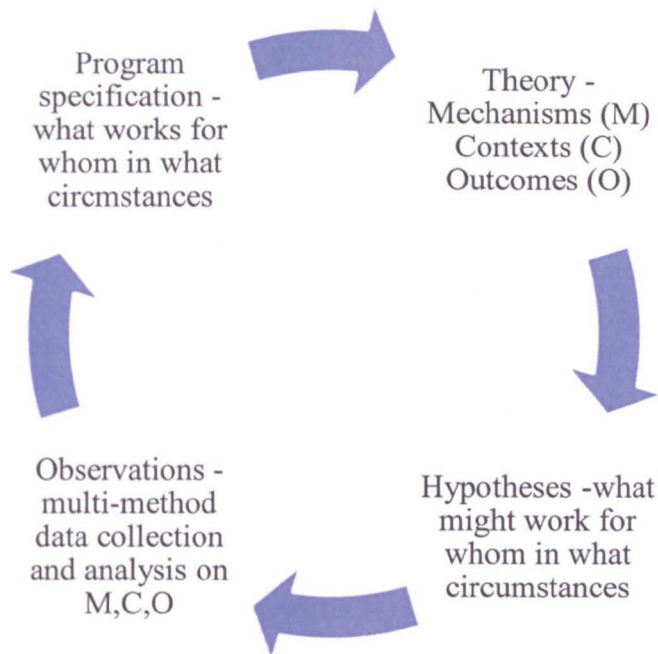


Figure 4.1: The realist evaluation cycle (From Pawson & Tilley (1997))

The forms through which data collection should take place in realist evaluation studies need not differ dramatically from other approaches to conducting research (Pawson & Tilley, 1997). However, it is the focus as opposed to the form that may be different. This study's methodology was rooted in critical realism (chapter two). The choice of methods in realist evaluations should be guided by the research question (McEvoy & Richards, 2006). In this study, from the realist review, a set of theoretical ideas had been formed about intermediaries and their potential to promote best practice. Thus, the methods were guided by the review findings. In realist evaluation studies, both qualitative and quantitative methods can be suitably employed (Pawson & Tilley, 1997; Westhrop et al 2011). For Julnes and Mark et al (1998: 491), 'a realist frame suggests to us a more balanced view of the value of these two inquiry traditions'. Gerring (2007) also believes that, methodologically, the focus on mechanisms fits with both qualitative and quantitative approaches. Whilst quantitative approaches can increase the reliability of descriptions and identification of patterns (McEvoy & Richards, 2006), contextual conditions and mechanisms can equally be identified through the use of qualitative methods (Westhrop et al, 2011). For McEvoy and Richards (2006), the strength of qualitative methods is the ability to capture unanticipated themes.

Kazi (2003: 29) believes that realist evaluators can justify being 'methodological pluralists', because they choose methods that will explain the success or failure of programmes or interventions. Pawson and Tilley (1997) argue that legitimising using multiple forms of data collection methods does not make them pluralists. Instead, they state that 'choice of method has to be carefully tailored to the exact form of hypotheses developed earlier in the cycle' (1997: 85). In this study, the theories which underpinned the realist review hypothesised that the success of intermediaries to promote best practice was reliant on specific contextual conditions. To explore the theories and to root the study in the realist approach, it was considered appropriate to use qualitative mixed methods case studies.

4.4 The case study –an overview

For some, the case study is perceived as a unique research paradigm because of the assumptions it makes about how the social world should be explored (Hammersley & Gomm, 2000). From this perspective, the case study positions itself with qualitative approaches (Lincoln & Guba, 1985). However, for Yin (2009:18) the case study is an 'empirical enquiry that investigates a contemporary phenomenon in depth'. There is no blueprint for how to do case study in healthcare research, although Yin (2009) offers a selection of examples of how mixed methods can be used either to strengthen the evidence offered case studies, or how the case study becomes one of the mixed methods within a larger study. In the literature, several terms are used to describe the case study process (whether it is a design, method, or strategy), highlighting that remain conflicting views as to the main purpose of the case study (Jones & Lyons. 2004: Anthony & Jack, 2009). For Yin, the case study is a process of scientific inquiry, whilst for Stake (1995) it is interpreted as the unit of study. Stake's perspective is advanced further by Miles and Huberman (1994:25) who liken the case to the 'heart of the study', thus being the unit of analysis. However, for Yin (2009:13), the case study 'investigates a contemporary phenomenon within its real-life context, when the boundaries between phenomenon and context are not clearly evident'. Yin's definition of the case study resonated most closely with the focus of this study; to elicit an in-depth understanding of the context, mechanism and outcomes that illuminate the success of intermediaries to promote best practice in the *reality* of practice.

4.4.1 Case study method and evaluating complex interventions

With the advance of the qualitative paradigm came a renewed interest in the case study as a method to examine complex interventions within their particular contexts (Anthony & Jack, 2009; Casey & Houghton, 2010). It is recognised that complex interventions are notoriously difficult to define (Blackwood, 2006). Furthermore, for this study, the realist review has highlighted the current paucity of evidence that exists to illuminate understanding of the mechanisms by which different intermediaries can successfully promote best practice. As Straus et al discuss (2009:160), 'it is difficult to identify the precise mechanism which may contribute to outcome because these interventions contain a number of different elements that act independently or interdependently'. Reflecting on this point, it was important to choose data collection methods that would allow the collection of meaningful data to explore a range of factors across a complex healthcare programme.

4.4.2 Types of case studies

This study followed Yin's explanatory approach, using an embedded design (Casey & Houghton, 2010). Case studies can be usefully differentiated through their holistic or embedded nature (Yin, 2009). The holistic design focuses on one overarching unit of analysis, whilst the embedded design may contain several units of analysis (Yin, 2009). In a different approach, Stake (1995) describes three types of case study: intrinsic, collective and instrumental; a typology which can be useful to illuminate the purpose of the case study without being too rigid in its description (Ellis, 2003). However, whilst the intrinsic case study has potential to be informative about the value of a particular programme or intervention, it may not answer the question, 'would it work here'? (Gomm et al, 2000). The instrumental case study aims to build theory which ultimately enhances general understanding, and can be drawn from a single case study (Ellis, 2003). This is different to the collective case study which uses multiple cases to understand the 'quintain', which is the pinnacle of case studies (Stake, 2006). This study followed Yin's explanation of a multiple-case design. An initial outline of the case study design for this study is illustrated below:

Case study one: NHS Trust hospital (England)	Case study two: NHS Health Board (Wales)
Embedded units: Surgical wards Medical wards Gynaecology ward	Embedded units: Acute Medical Unit Care of the Older Person Ward Isolation Ward

Table 4.1: Outline of the case study design

4.4.3 Single versus multiple case

Yin (2009) differentiates between single and multiple case studies. Single case study descriptions include the critical case approach, whereby a set of propositions have been made explicit through an examination of the existing theory, but where there is scope to ‘confirm, challenge, or extend the theory’ (Yin, 2009:47). This approach resonated with the study whereby the initial theoretical framework developed from the realist review guided the selection of the sites. However, in this study more than one case was examined to strengthen the findings and increase the robustness of the study (Herriott & Firestone, 1983). Therefore the study followed a multiple case design (Yin, 2009). In his address to the researcher, Yin (2009:58) explains, “you should think of this decision as a reflection of the number of case replications—both literal and theoretical—that you need or would like to have in your study”. For the first study phase, the purpose was to build an embedded case study to elicit information about a phenomenon (Casey & Houghton, 2010) (in this case, to understand the context, mechanisms and outcomes to show the successful elements of an intermediary programme to promote best practice). The propositions from the first case study could then be used as a ‘means to an end’ (Polit & Beck, 2004), to be tested and refined by a second case study. For both case one and two, the infection

control strategy and operational plan of the NHS organisations provided the boundaries of the cases.

4.4.4 Multiple case study designs and replications

According to Yin (2009), multiple case studies have become more prevalent in recent years. For Yin (2009:53), ‘a major insight is to consider multiple cases as one would consider multiple experiments –that is, to follow a ‘replication’ design’. This resonated with the aims of this realist evaluation study, which was focused on understanding theoretical regularities which could be tested further in subsequent studies. Guided by Yin (2009), the decision about the number of cases for this study was influenced by the principles of realist evaluation; the methodological framework for the study. The danger of one-off evaluations are outlined by Pawson and Tilley (1997), who argue that, in order to most successfully inform future practice and policy, programmes and interventions need to be subject to refining. Connolly (1998) supports the choice of case studies to uncover the unseen dynamics within different social programmes, and advocates using multiple case studies to find the causal processes (Hammersley & Gomm et al, 2000). The purpose of conducting multiple case studies in this study was to develop and refine theoretical propositions. As Miles and Huberman (1994: 29) state, “multiple-case sampling adds confidence to findings. By looking at a range of similar and contrasting cases, we can understand a single-case finding, grounding it by specifying how and where, and, if possible, why it carries on as it does”.

4.4.5. The case study and realism

In this study, realist evaluation provides the theoretical framework which represents the underpinning methodology. Critical realists place the emphasis on *how*, rather than *which*, an ethos which shapes the research methods that they use (Pratschke, 2003). The case study method was chosen because of its congruence with the ethos of realism (Caelli et al, 2003). The case study has the potential to reveal ‘causal processes’ (Hammersley et al, 2000: 234) through the in-depth examination of programmes or interventions. According to Baxter and Jack (2008), Yin’s case study approach is appropriate for ‘how or ‘why’ research questions. The case study can also be insightful to uncover mechanisms which represent reality, resonating with the

critical realist perspective (McEvoy & Richards, 2003). Glaser and Strauss (1967) describe this as 'in vivo' processes that the researcher in the field can observe as case study data is collected. Waller (1934) discusses that, in case study research, where assumptions are made by individuals based on observations, relationships between assumptions then become cumulative and become more significant over a period of studies. This argument resonates with the realist perspective and highlights the cumulative nature of realist evaluations. It also highlights the importance of maintaining rigour in the case study process, to ensure that any subjectivity on the part of the researcher is minimised. Addressing rigour in this study is addressed further in this chapter (section 4:10).

4.4.6 Case study and realist evaluation

The case study design is recognized as being particularly apt when the focus is on seeking answers to the 'how' question (Yin, 1994), akin to the principles of realist evaluation where the aim is to unlock the underlying mechanisms of action. Case study design has been used successfully in healthcare studies driven by the principles of realist evaluation (Marchal et al, 2010; Rycroft-Malone et al, 2010), both design and methodology are linked by a recognition of the importance of context (Rycroft-Malone et al, 2010). As identified in the realist review, little evidence of theory exists to explain the potential impact of intermediaries in promoting best practice. In the first phase, for example, the programme chosen (a clinically embedded infection control intermediary programme operating within one NHS Trust) could be examined through the case study design, using the initial programme theories hypothesised from the realist review to guide the data collection process, whilst being mindful that new, previously unidentified mechanisms, contextual factors and outcomes could emerge (Pawson & Tilley, 1997).

Complementing the theory-driven approach of realist evaluation, theory development is a key function of the case study method (Yin, 2009). Yin (2009) points out that theory development is imperative to the case study design. In this study, the principal objective of the case study method was to uncover and refine CMO propositions to show how intermediaries might impact on the promotion of best practice. In other words, the case studies were designed to advance theory

development. In case study one, the initial theoretical framework from the realist review was used to guide the design of the case.

4.4.7 Case studies and generalizability

Clarke and Reed (2010) refer to problems of making general claims from a single case study, especially in view of the complex and unique nature of the real world setting (Koenig, 2009). Stake (1995) acknowledges that the purpose of the use of the case study is not to find generalizations. Stake (1995) suggests a different objective for the case study, based on what it can do, which he terms 'particularisation'. In essence, Stake advocates the importance of truly understanding the case, which can then potentially lead to modified generalizations later on. Cronbach (1975) argues that unique situations make it impossible for the researcher to be able to generalize. However, transferability is theoretically possible if the description of the case is sufficient to extract similarities to other settings (Lincoln & Guba, 1985). Moreover, for Yin (2009), theoretical replication is possible when knowledge about a phenomenon is enhanced from one case study to another. Zucker (2009:10) reports how, in Yin's view, "theoretical generalisation is to the domain of case study what statistical generalization is to the true experiment".

Gomm et al (2000: 98) questions whether generalisation is ever the intention from the case study, alluding instead to 'naturalistic generalisation', a term coined by Stake (1994). This term suggests a different focus, i.e. consideration of the case study findings from the perspective of the end users (Lincoln & Guba, 2000). What Stake (1995) does here is argue for a case study design that promotes understanding for the reader by providing 'thick descriptions' of the phenomenon under study, focusing on the perspective of those being studied. However, 'naturalistic generalization' appears to rely equally on the experiences of the reader as well as the case study participants (Stake, 1995). Naturalistic generalization is not sufficient if it is largely tacit, and thus cannot be truly shared with others (Hamilton, 1979). For Pawson and Tilley (1997: 119), 'the process of generalisation is essentially one of abstraction. We move from one case to another, not because they are descriptively similar, but because we have ideas that can encompass them both'. In essence, realist evaluation seeks the mid-range theories which enable a level of understanding of

events which are examples of ‘more general class of happenings’ (Pawson, 2013: 89).

Case studies are useful for realist evaluation studies in order to focus attention on all elements of the CMO triad, and to progress and refine knowledge from one case to another (Pawson & Tilley, 1997). From a realist evaluation perspective, case studies are not conducted to provide generalisations. In this way, Pawson and Tilley (1997: 86) guide the researcher away from striving for ‘generalizability’, instead suggesting that the aim of realist evaluation is to find a degree of what is termed as ‘specification’ (Pawson & Tilley, 1997: 86). In a realist evaluation, the purpose of choosing case study methods is to seek the ‘descriptive particulars’ of programmes or interventions (Pawson & Tilley, 1997: 119). Mixed methods case studies are considered to complement realist evaluation by using a range of data, and focusing on understanding context (Rycroft-Malone et al, 2010).

4.5 The research question

As outlined in chapter one, the study aimed to evaluate the role of intermediaries in promoting best practice, focusing on the domain of infection prevention and control, to determine what works, for whom, how, and in which circumstances. By choosing mixed methods to collect data over two case studies, the study objectives would be achieved:

- To identify intermediary mechanisms and understand the ways in which different intermediaries influence practice (Case 1 & 2)
- To understand the context within which intermediaries operate (Case 1 & 2)
- To develop CMOs that explain the relationship between specific mechanisms and conditions (contexts) , and how this leads to change or particular practice (outcomes) (Case 1)
- To build and refine the CMOs through data collection (Case 2)

4.6 The cases

Thus far, this chapter has provided the rationale for choosing the case study method to complement the realist evaluation methodological approach. The following section charts the methods employed to collect and analyse data across the study.

Yin points to the importance of taking care to choose cases which will either produce similar or contrasting results. Similar results are described as 'literal replication' whilst contrasting results are termed 'theoretical replication' (Yin, 2009). Following in the footsteps of Yin's case study method, this study had commenced with theoretical ideas about *how* intermediaries could be effective to promote best practice from the realist review, and then planned to conduct case studies to develop propositions and 'test' the theory. Whilst both cases were not identical, they were similar in their properties. According to Yin (2009: 56), "each individual case study consists of a 'whole' study, in which convergent evidence is sought regarding the facts and conclusions for the case; each case's conclusions are then considered to be the information needing replication by other individual cases". Therefore, for this study, the findings from case one formed the basis for planning the second case study.

4.7 Purposive Sampling

Purposive sampling is useful for its representation for the phenomenon of interest, and is recognized for its usefulness in developing or testing explanatory frameworks (Procter et al, 2010), resonating with the aims of this study. Whilst this approach is reliant on the researcher's judgement as to the appropriate selection of sample (Robson, 1993), Yin offers some guidance as to how to approach sampling for case study design. In multiple case study design, the choice of cases is important to enable the prediction of similar or contrasting results across cases (Yin, 2009). For this study, the sampling of cases in different contexts would enable data to be analysed within and across case sites (Baxter & Jack, 2008). Therefore, time was allocated to seeking available information about potential study sites before entering the decision-making process about sampling (Procter et al, 2010). To this end, the initial programme theory from the realist review was used to guide this process. Establishing boundaries for the case studies was important to ensure the scope remained reasonable for the aims and objectives of the study (Baxter & Jack, 2008). Establishing boundaries provides the 'breadth and depth' of the study (Baxter & Jack, 2008: 547). During the process of selecting the case study sites, the realist approach ensured that attention was focused on the aims of understanding what was working (in relation to different intermediaries and their contribution to promoting

best practice), and also to elicit better understanding of the contexts (Pawson & Manzano-Santaella, 2012). The purposive sampling criteria for participants were:

- employees of the chosen organisations who would consent to take part in the study
- participants with infection control responsibilities
- adults over 18 years with the capacity to consent

4.7.1 Case study one

Two NHS sites within the UK were purposively sampled for the case studies. The boundaries of this first case were an infection control intermediary programme operating within one NHS Health Trust; their particular strategy for infection prevention and control. The site was selected for its infection control intermediary programme which incorporated designated intermediary roles to address challenges in infection control practice. A detailed description of the case site follows in chapter five (section 5.6).

4.7.2 Case study two

The boundaries of case study two were the infection prevention and control strategy of one NHS Health Board. This site was selected to provide a different setting and context to case one, and to test the CMO propositions. The Health Board had recently undergone a major reorganisation, leading to transitional working and the development of a new infection control strategy and structure. The structure made explicit specific responsibilities for infection control, decontamination and cleanliness across the Board. The strategy's strategic objectives were formed around the 'zero tolerance' approach to avoiding HCAs, and provided a local delivery plan, outlining key responsibilities for the organisation's strategy for infection prevention and control. A detailed description of the case site follows in chapter five (section 5.7).

4.7.3 Individual-level participants

In both case studies, purposive sampling was used to identify individuals within the organizations who had professional or organizational responsibilities for infection

prevention and control. Further, as sample sizes are relatively small in qualitative studies, to use random sampling in this study could have limiting effects (Miles and Huberman, 1994). For Yin (2009), sample size in multiple case studies does not conform to the typical criteria. The inclusion criteria for participants were; employees of the chosen organisations who would consent to take part in the study, participants with infection control responsibilities, adults over 18 years with the capacity to consent. The exclusion criteria was; participants outside of the chosen organisation, participants under 18 years of age, and participants who lacked the capacity to consent.

4.8 Data collection methods

According to Baxter and Jack (2008), using multiple methods provide the hallmark of case study research. The study's aims and objectives formed the basis of choosing the most appropriate data collection methods and consider the desired outcomes of the data collection process. The types of outcome were isolated in a data collection summary form in order to try and guide the emergence of CMOs for this study (Appendix 4.1). Foster and Hope's criteria (1993), used in an early realist evaluation study, guided the data collection summary. The mapping framework developed by Gomm (2000) was also useful to guide the collection of data across different settings (Greenhalgh et al, 2004b). The framework includes a list of specific factors which can be examined to understand how they might be interpreted in different contexts (Gomm, 2000). Each factor was considered for its meaning for this study. For example, the 'resources' in this study would be those which promote infection control practice within the case study sites. To address the study's aims and objectives, mixed methods were considered to be most appropriate. Data were collected using the methods which are outlined below in more detail.

4.8.1 Face to face interviews

The main method for data collection were interviews, considered by Yin (2009) to be one of the most important data collection method in case study research. The theoretical roots for this study (critical realism and realistic evaluation) draw on the use of data collection methods such as the interview, to help to build on theory by explaining the relationships between social processes and understanding context

(Tod, 2010). For this study, the semi-structured interview approach was used (Yin, 2009). Using this approach enabled a degree of focus on emerging CMO configurations as well as enabling some flexibility. As the study progressed, this approach to interviewing allowed for the uncovering of new or different mechanisms, or the uncovering of new contextual influences or outcomes. Yin (2009) outlines the potential strengths and weaknesses of the interview (Table 4.2), which were useful to consider when developing and conducting the study:

<p>Targeted -focuses directly on case study topics</p> <p>Insightful-provides perceived causal inferences and explanations</p>	<p>Bias due to poorly articulated questions</p> <p>Response bias</p> <p>Inaccuracies due to poor recall</p> <p>Reflexivity -interviewee gives what interviewer wants to hear</p>
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Table 4.2: Strengths and weaknesses of interviews (from Yin, 2009)

In case study one, an interview guide was drawn up for the semi-structured interviews (Appendix 4.2). The basis for the interview guide was drawn from the study aims and objectives, and the initial programme theory from the realist review to guide the choice of questions for the interviews in a structured manner, but without being too rigid.

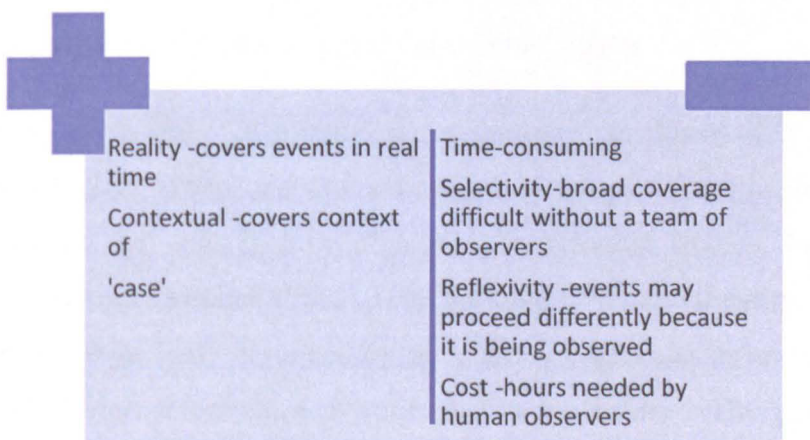
4.8.2 The teacher-learner interview

Pawson and Tilley (1997: 218) suggest that, in the interview, ‘the medium of exchange is the CMO theory and the function of that relationship is to refine CMO theories’. The interviews in case study two, therefore, employed the ‘teacher-learner’ approach, whereby the CMO propositions formed the basis of discussion between interviewer and participants. In essence, the interviewer explains the purpose of the interview, and ‘teaches’ the CMO propositions to the participants (Pawson & Tilley,

1997: 176). The data from the interviews were therefore focused on building and refining the CMOs. Examples and information provided by participants were ‘a way of accessing and then making explicit forms of theory which may not have been fully articulated previously’ (Pawson & Tilley, 1997: 176).

4.8.3 Observations

Observing different elements within the cases was considered important for this study in order to ‘observe the full richness of an individual’s behavioural repertoire and understand the conditions to which each activity is adapted’ (Martin & Bateson, 1993: 12). Observations provide opportunity to verify if what is known and what happens in practice actually correspond (Mulhall, 2003). Further, for this study, choosing observations provided an understanding of the context and the background environment of the situation under study (Mulhall, 2003). Observations are important in case study approaches for their ability to increase understanding of a phenomena when used in conjunction with other data collection methods (Parahoo, 2006). Yin (2009:102) considers observations to be instrumental in case study research to observe events immersed within the real world. Yin (2009) outlines the potential strengths and weaknesses of observations that researchers can consider during the course of conducting case studies (Table 4.3):



<p>Reality -covers events in real time</p> <p>Contextual -covers context of 'case'</p>	<p>Time-consuming</p> <p>Selectivity-broad coverage difficult without a team of observers</p> <p>Reflexivity -events may proceed differently because it is being observed</p> <p>Cost -hours needed by human observers</p>
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Table 4.3: Strengths and weaknesses of observations (from Yin, 2009)

Mulhall (2003) distinguishes between structured and unstructured observations. For the case studies, unstructured observations were employed, guided by an observation schedule. Unstructured observations are useful data collection methods where the purpose is to try and understand human behaviour within specific contexts (Jorgensen, 1989; Mulhall, 2003). Non-participant observation was used, where the researcher has no influence on the observed phenomenon (Watson et al, 2010). This approach was considered to be apt for the aims and objectives of this study, in contrast with participant observations which would be more appropriate for ethnographic approaches (Watson et al, 2010).

An observation guide, based on Spradley's dimensions of observation (1980) was used to record data and record the participants' activities (Appendix 4.3). Spradley's dimensions would ensure that the focus remained on the aims of the observations. Spradley's criteria (1980) guide the observer to describe what they are seeing through focusing on nine elements (Appendix 4.3). The elements are described by Spradley (1980) as common but essential features within a given social situation, and a matrix is provided to guide the researcher to consider how the elements are linked, thus identifying relationships between elements if they exist. Spradley's dimensions (1980) were useful in guiding the observations, where the focus is mainly on behaviour and events but where there is some level of interaction with participants (Watson et al, 2010). For example, the observation guide was used to record settings, people, emotions and accomplishments. Using the guide was important to maintain focus on the systematic collection of data (Watson et al, 2010).

Recording observation data is usually done through the form of field notes (Fitzpatrick & Boulton, 1994), and this approach was adopted for this study. The 'field' is a nondescript term that is often used in research studies, but largely undefined. According to Mulhall (2003: 310), the field is 'a natural entity, out there, which needs to be objectively described by the observer, who acts as an impersonal channel through which information is conveyed to the reader'. The use of non-participant observation enabled a clearer understanding of the case study sites, and the collection of data which illuminated the contexts, mechanisms and outcomes. Field notes were made in the observation guide, and recorded as the events occurred or soon afterwards (Watson et al, 2010).

Non participant observation could be perceived as threatening and participants could be concerned about confidentiality. Participants were reassured, through written and verbal information, that the observations were not an assessment of performance in any way. Participants were anonymised throughout the data collection periods, analysis and reporting of study findings. Informed consent was gained before the observation periods. Information sheets were available to inform the embedded units about the study (Appendix 4.4). Study information sheets were also available from the researcher throughout any observation period for information.

4.8.4 Documentation review

For Yin (2009) the main reason for choosing to collect documentary evidence in case studies is to verify the data obtained through other means (i.e. for this study, semi-structured interviews and non-participant observations). Documentation can provide a broad sense of the backdrop to the programme, and its collection is appropriate for inclusion to support case study findings (Yin, 2009). Below, the strengths and weaknesses of using documentation as a source of evidence in case study method are tabled below:

<ul style="list-style-type: none"> Stable -can be reviewed repeatedly Unobtrusive-not created as a result of the case study Exact-contains exact names,references,and details of an event Broad coverage-long span of time, many events, and many settings 	<ul style="list-style-type: none"> Retrievability-can be difficult to find Biased selectivity,if collection is incomplete Reporting bias-reflects (unknown) bias of author Access-may be deliberately withheld
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Table 4.4: Strengths and weaknesses of using documentation as source of evidence in case studies (from Yin, 2009)

Relevant documentation was collected to build a picture of the backdrop for both cases. For example, infection control policy, newsletters, and guidelines provided background information for the different sites. Documentation collected relating to

the organization and the geographical setting also helped to set the scene. A detailed report of different documentation is reported in Appendix 5.1 and 5.2.

4.9 Data Analysis

“No matter what specific analytical strategy techniques have been chosen, you must do everything to make sure that your analysis is of the highest quality” (Yin, 2009: 160). There was little specific evidence to draw from to show the data analysis process for realist evaluation studies. Jackson and Kolla (2012: 340) allude to the challenges of analysing “connected strings of data in a way that is different from grouping codes under common themes”. However, Pawson (2013: 22) provides guidance to ensure the focus of analysis is fixed on the “propositional-building function of the CMO”. In case study research, multiple sources of data collection are converged in data analysis (Baxter & Jack, 2008).

Qualitative interview data was analysed guided by the steps provided by Miles and Huberman’s framework (1994). Miles & Huberman (1994) provide a detailed step by step guide for qualitative research analysis, and this was used to guide the process, along with Yin’s (2009) analytical framework for case study research. Following the realist methodological approach, data analysis was focused on coding interventions, contexts, mechanisms and outcomes (Marchal et al, 2012). For case study one, a list of codes (Appendix 4.5) was drawn up based on the model of context and literature

(Miles & Huberman, 1994; Yin, 2009), an approach which resonated with Pawson and Tilley (1997)’s hypotheses testing approach in realist evaluation studies. A contact summary sheet was devised for interview and observational data (Appendix 4.6). A documentation evidence summary form (Appendix 4.7) was similarly devised for the documentation evidence collected throughout the study. Audio data from face to face interviews were transcribed verbatim, and the text read and reread to increase familiarity (Lacey & Luff, 2001). Following transcribing the interviews and reading through, codes were then assigned to the interview text, observation and documentation data. Codes are labels that are given to sections of data that provide a sense of meaning and can vary from descriptive to more inferential (Miles & Huberman, 1994), however codes changed as the analysis progressed and new codes

emerged, a process referred to as 'filling in' (Lincoln & Guba, 1985). Data from non-participant observations were analysed and coded as individual units initially, and together with documentary evidence, were then compared and merged, in relation to emerging CMOs, across the cases through triangulation of different data sources.

4.9.1 Data reduction

Open coding as well as coding against the initial hypotheses resulted in a revised set of codes (Appendix 4.8) formed through knowing the data. Whilst some initial codes remained significant, the revised coding framework included those which emerged from scrutinizing the data sets. From this, patterns could be located to match to the descriptive framework, based on the main categories of context, mechanisms and outcomes. The codes from the data were mapped to the main categories and were then analysed more deeply to formulate a set of sub-categories (Miles & Huberman, 1994).

4.9.2 Data display method

The sub-categories were fed into a conceptually clustered matrix (Appendix 4.9). This approach is useful when analysis is attempting to delineate between roles and interventions (Miles & Huberman, 1994). This process was also useful to show the approaches used by different intermediaries, which could then be distinguished from context, mechanisms and outcomes when more detailed analysis was in progress.

4.9.3 Verifying the data

The next step of data analysis was an iterative process of identifying different context, mechanism, and outcome patterns to verify the data (Miles & Huberman, 1994). The process involved clarifying the links between different context, mechanisms and outcome threads, to show the relationship between them, and refining this process repeatedly to form a final range of inferred context-mechanism-outcome propositions. A working example of this process is provided in chapter five (Table 5.4).

For the second case study, the findings from case study one were used to guide the data analysis process. However, data was also collected which showed other findings indirectly related to the CMO propositions, to ensure that data collection and analysis was not constrained by the realist framework (see Chapter 5: section 5.14.1). The data collection methods in this case (interviews and observations) and documentation evidence were focused on testing the propositions from the outset. Content analysis was used to test theoretical issues (in this study, the CMO propositions) and improve understanding of the data (Elo & Kyngas, 2008). However, this approach also enabled the capture of any potential new data. In this case, coding was more deductive, whereby previously developed knowledge (CMO propositions) frames the analysis structure and data is tested in a different context (Elo & Kyngas, 2008). In case two, analysis was also similar to the pattern-matching technique, whereby evidence was collected to refine the stated CMO propositions, if other patterns could be identified, or whether other factors emerged which warranted consideration (Yin, 2009). Hak and Dul (2009:1) offer this definition of the principles of pattern-matching:

“Pattern matching is comparing two patterns in order to determine whether they match (i.e., that they are the same) or do not match (i.e., that they differ). Pattern matching is the core procedure of theory-testing with cases. Testing consists of matching an “observed pattern” (a pattern of measured values) with an “expected pattern” (a hypothesis), and deciding whether these patterns match (resulting in a confirmation of the hypothesis) or do not match (resulting in a disconfirmation)”

Using pattern-matching in case two, the data analysis process was able to stay true to realist principles; to test and refine the CMO propositions from case one and to identify the findings which could be developed to formalise a set of demi-regularities. Content analysis was also useful in this way to develop categories and models (Elo & Kyngas, 2008). The category framework in this case was based on the CMO propositions developed in case one, and enabled aspects from the data to fit to the framework (Elo & Kyngas, 2008). A working example is provided in chapter five (see section 5.6, 5.7 & Table 5.4). However, to avoid being constrained by the category framework, additional data were also reported ‘to create their own

concepts, based on the principles of inductive content analysis' (Elo & Kyngas, 2008: 112). These additional findings were helpful to show what was supporting or refuting the CMOs.

4.10 Rigour

The terms validity and reliability have been considered to be incompatible with qualitative research (Slevin & Sines, 2000), and the need to demonstrate rigour in qualitative research is undisputed amongst qualitative researchers (Mill & Ogilvie, 2003). In qualitative research studies, the principles of credibility, dependability, confirmability and transferability are used to address the rigour of the research process (Lacey, 2010; Houghton et al, 2013). Criteria for evaluating the rigour of a research study were considered throughout the study (Leininger, 1994; Houghton et al, 2013). The following section reports on the specific strategies used in this study to address quality and rigour.

Multiple methods of data collection were used to ensure triangulation, and an evidence trail was established through field notes, audio taping, and use of an observation criteria. The documentation evidence was reported to inform and support the data. To address construct validity, multiple data collection methods were used and the case site report was sent back to the site to ensure accuracy. Credibility was addressed by spending sufficient time in the case study sites to fully understand the CMO propositions and their subsequent testing and refining. Detail of time spent in each study site is reported in the overview of case studies and timelines (chapter five: table 5.1). Recruitment of participants continued until consistent patterns were noted in the analysis process and it was felt data saturation had been achieved (Houghton et al, 2013). Stakeholder groups were formed to provide feedback on the study's findings and address member checking by discussing the constructs developed from the analysis process (Koch, 1994). Member checking also occurred through discussion of emergent findings in the supervision process.

Transferability was addressed in chapter five through providing a thick description of the two cases in the reporting of the findings. This would enable the reader to make judgements about the transferability of this study's findings to different contexts (Houghton et al, 2013). The data analysis process was overseen by two

experienced researchers. Rigour can be enhanced if peer debriefing is used to ensure general agreement with data labels and coding of data (Houghton et al, 2013). The realist review undertaken in the first phase of the study led to the development of an initial theoretical framework to explain how and why intermediaries have the potential to be successful to promote best practice. Transferability was also attended to through applying the study results to broader theory. The research protocol and audit trail supported the rigour of the process to show how decisions were made and why, thus addressing dependability and confirmability (Houghton et al, 2013).

Reflexivity was an important part of the study's rigour (Houghton et al, 2013), and a section on how thoughts and ideas throughout the process contributed to the study's findings are reported in chapter seven (section 7.10).

4.11 Ethical considerations

Johnson and Long (2010) provide researchers with guidance to ensure ethical considerations are upheld during the course of conducting research. For this study, ethical approval was sought and granted by the University research ethics committee and local site ethics committees (10/H1202/78) (Appendix 4.10). Access to both sites was granted by the local R&D Committees. The researcher was supervised throughout the study by two experienced academic supervisors. Government funded training was undertaken to prepare and develop researcher skills to conduct the research competently (Appendix 4.11). From Johnson and Long's (2010) perspective, the process is described under sub-headings, hereby used to explain the ethical considerations for this study, and supported by brief extracts from actual interview transcripts where appropriate.

4.11.1 Respect for participants (Johnson and Long, 2010)

Participants were treated with respect and courtesy throughout, and efforts made to make them feel comfortable and confident throughout the data collection process. Participation was entirely voluntary and participants were made aware that they could withdraw at any time:

INT: So thank you for agreeing to ...

RES: You're welcome, yeah.

INT: ... doing this interview today. Maybe if we start off by you just telling me a little bit about yourself....

4.11.2 Adequate information on which to base choices (Johnson and Long, 2010)

Participant information sheets were drawn up carefully to provide a balanced approach to provision of information (Appendix 4.12). In addition, throughout the course of the study, opportunities were available to participants to revisit the aims and purposes of the study, and to consider the contribution of the information they provided to the study as a whole:

INT: so just to fill you in a little bit, I know you've had the invitation sheet,

RES: yes, yes

INT: just to tell you what I'm doing...

4.11.3 Understanding and evaluating the issues involved (Johnson and Long, 2010)

The inclusion criteria for participant selection were limited to individuals over the age of 18 with the capacity to consent. During the interviewing process, efforts were made to ensure that participants were comfortable and fully aware of the process, and that the time that they had committed to the study was not exploited:

INT: see how we go, is that OK for you, are you OK for time?

RES: Yeah.

INT: just let me know if you need to go....

4.11.4 Perceived or actual coercion (Johnson and Long, 2010)

Throughout the study, efforts were made to ensure participants were not under pressure to participate. Having secured access to the organisations through the local research and development committees, letters of invitations to take part in the study were disseminated to potential participants by local collaborators in both case studies to minimise the risk of face to face coercion by the researcher (Appendix 4.13).

4.11.5 Gaining consent (Johnson and Long, 2010)

Detailed information sheets were provided to assist potential participants to make informed decisions, and verbal information was available as required. Consent forms were signed by participants who then agreed to take part (Appendix 4.14).

4.11.6 Maintaining confidentiality (Johnson and Long, 2010)

Participants' rights to confidentiality were upheld throughout the research process. Hard data (for example, documentation evidence, and signed consent forms) collected throughout the study were stored securely in locked filing cabinet. Computerised data were coded and stored securely on an encrypted password protected computer, accessible only to the researcher. Participants who consented to taking part in the study were informed that data could be stored for secondary data analysis and teaching, and stored for up to 10 years.

4.11.7 The place of anonymity (Johnson and Long, 2010)

All participants' personal data from recorded interview transcripts were anonymised through removal of any personal information, and the assigning of codes for individual participants. Personal data, in the form of reference to workplace, location, and names of individuals were removed from the data. Participants were assured that anonymity would be assured through the process including the reporting of study findings.

4.12 Conclusion

This chapter has provided a detailed exposition of the methods which were employed in this study to collect and analyse data. The rationale for choosing the case study method has been outlined. It was important to demonstrate the relationship between the methodology for the study, rooted in realism, and the applicability of the methods to show the match between them. The interplay between the case study method and realist evaluation principles has been described in this chapter. Additionally, the data collection methods chosen to ensure a comprehensive understanding of the case study sites and to elicit CMO propositions in case one have been reported. In case two, the testing and refining of the CMO propositions was guided by the realist evaluation teacher-learner interview. Data analysis in realist evaluation studies is often under-reported. The contents of this chapter have provided an overview of the process undertaken for this study, including issues of rigour and ethical considerations. The next chapter presents the findings from the case studies to illustrate the development and refining of CMO propositions.

CHAPTER 5:

Findings

5.1 Introduction

This chapter is a report of the findings from the case studies. As presented in chapter four, case study design was used to collect data in this study, incorporating semi-structured interviews, non-participant observations and documentary evidence over two cases. In case study one, analysis of the data resulted in the emergence of a number of CMO propositions, where mechanisms could be seen to be linked to specific contextual conditions. In case study two, these were explored in more depth, to build upon the findings from case one and to refine where appropriate. The findings are reported in this chapter and are supported by verbatim participant quotations from interviews, and observational and documentation data. The chapter begins with a brief overview of the case study design, followed by a detailed description of the two sites, and information to introduce the participants recruited and the types of data collected. The data analysis process has already been presented in chapter four. Here, specific examples are provided to demonstrate how the analysis process was focused on finding relationships between contexts, mechanism and outcomes.

In realist parlance, the focus on cumulation (which will be discussed in section 5.4) is instrumental to developing middle-range theory. The focus on cumulation underpinned the study's design to choose two case study sites; one in which there was an identifiable champion programme working in clinical practice as part of their infection control role, whereas the second case used a distributed approach in the infection control strategy whereby role holders, operating at different levels, were recognised as infection control intermediaries.

5.2 Overview of the case studies

In view of the programme theories constructed from the realist review in chapter three, case one was designed to search for detailed CMOs to explain what triggers

psychological and motivational responses which can lead to behaviour change and promote best practice in infection control. The case studies resulted in the development of a range of CMOs, generating explanations about infection control intermediary programmes. Whilst the CMOs provided a degree of insight into the factors (contexts and mechanisms) which show how intermediaries operate, case one was confined to one group of people in a clinical champion programme. Pawson and Tilley (1997:115) lament that “most evaluation studies seem to be one-off affairs. They neither look back and build on previous findings, nor look forward to future evaluations”. In response, the second phase of the study was designed to build on the CMOs in a different setting, choosing a different case site where a distributed range of different infection control intermediaries were identified, to increase the specificity of the CMOs, and improve general understanding of the contingencies between each of them. The design of the second case study would provide evidence from a different site, a process which, according to Pawson and Tilley (1997), deepens understanding of the CMOs in a realist evaluation study. As detailed in chapter four, data analysis for the second case study followed the pattern-matching technique to refine and build further explanations around the CMOs (Pawson and Tilley, 1997). Table 5.1 below presents an overview of the case studies, and the details of the timelines of the study:

2008-2010	2011	2012-13
	<i>Case study 1</i>	<i>Case study 2</i>
Realist review of the literature	Semi-structured interviews	Semi-structured interviews
Ethical approval for the study	Documentation review	Documentation review
Access to site (case one)	Non-participant observations	Non-participant observation
Recruitment of participants (case one)	Transcribing & data analysis	Transcribing & data analysis
Writing process	Writing process	Writing process
	Access to site (case two)	
	Recruit participants (case two)	

Table 5.1 Overview of the case studies and details of the timelines of the study

5.3 Participants

The purposive sampling inclusion criteria was used to identify participants within the two sites who had professional or organizational responsibilities for infection control, to build a comprehensive picture about the role, function and impact of intermediaries and elicit information about the context and practice in the embedded units within the two case sites. In case one, participants who consented to taking part in the study included the infection control clinical champion programme role-holders, and other people with clinical and/or managerial responsibilities for infection control. In case two, participants who consented to taking part showed how the organisation used a distributed approach to their infection control strategy, and consisted of infection control intermediaries, and other clinical staff with different responsibilities for infection control working within the embedded units, for example staff nurses, housekeepers, and healthcare assistants. In both cases, data drawn from interviews, documentary evidence, and observations were analysed (section 5.6).

5.3.1 Invitation to participate

In both cases, letters of invitation to participate in the study were initially sent to the local study collaborators to disseminate amongst potential participants (Appendix 4.13). Snowball sampling was used to identify other individuals with specific responsibilities for infection control to invite them to take part in the study. An information sheet accompanied the invitation letter (Appendix 4.13), and participants who expressed an interest in taking part in the study were contacted by the researcher and requested to sign a consent form (Appendix 4.14). In case study one, fifty invitations to participate letters were disseminated. The number chosen was based on the size of the hospital and the number of clinical champions in the role. In case two, one hundred and fifty invitations to participate letters were disseminated to reflect the wider geographical distribution of the organisation and the embedded units, and the model of distributed intermediary roles used. Face to face semi-structured interviews were conducted at a time and place convenient for participants and were audio-tape recorded with participants' consent. Observation periods were planned around participants' work to minimise any disruption to them, and took place during clinical shifts, lasting on average 3-4 hours. The observations were useful in setting the scene and being able to describe the participants' working environments.

Documentary evidence was collected during data collection periods in both sites (see Appendix 5.1 & 5.2). Participant recruitment continued until it was judged that data saturation had been achieved, where consistent patterns were noted in the data analysis process (Procter et al, 2010). The total number of participants recruited is illustrated below in a table which summarises the data collection methods and how they were used across the two cases (Table 5.2).

	Interviews	Additional data collection
Case study site 1	<p>Semi-structured interviews (n=9)</p> <p>Length: between 30-60 minutes</p> <p>Audio-taped and transcribed</p> <p>Participants:</p> <p>Manager (1)</p> <p>Clinical Matron (1)</p> <p>Clinical Nurse Specialist (1)</p> <p>Clinical champion for Infection Control (4)</p> <p>Band 5 staff nurse (1)</p> <p>Health care Assistant (1)</p>	<p>Non-participant observation periods (n=4)</p> <p>Documentary evidence (see Appendix 5.1 for details)</p>
Case study site 2	<p>Semi-structured interviews (n=23)</p> <p>Length: between 30-60 minutes</p> <p>Audio-taped and transcribed</p> <p>Participants:</p> <p>Matron (1)</p> <p>Band 7 nurse (2)</p> <p>Band 6 nurse (2)</p> <p>Band 5 nurse (5)</p> <p>Health Care Assistant (2)</p> <p>Clinical Nurse Specialist (2)</p> <p>Housekeeper (2)</p> <p>Infection Prevention and Control Nurse (4)</p> <p>Domestic staff (1)</p> <p>Ward clerk (1)</p> <p>Pharmacist (1)</p>	<p>Non-participant observation period (n=1)</p> <p>Documentary evidence (see Appendix 5.2 for details)</p>

Table 5.2: Data collection methods and participant recruitment

Following the transcribing of data, participants were allocated codes to denote their specific role. The following table (5.3) indicates the codes used for each participant. In the reporting of the findings, ‘a’ denotes case study one and ‘b’ denotes case study two.

Matron	Manager	Clinical Nurse Specialist	Clinical Champion	Band 7 nurse	Band 6 nurse	Band 5 nurse
M	MR	CNS	CC	B7	B6	B5
Healthcare Assistant	Ward Clerk	Pharmacist	Domestic staff	Housekeeper	Infection Control Nurse	Cleanliness support worker
HCA	WC	P	D	H	IPC	CSW

Table 5.3 Participants' codes

5.4 Cumulation and case study site selection

In realist evaluation, cumulation is a process which Pawson and Tilley (1997:116) describe as “going back and back again to puzzle over present findings about the effectiveness of current practices, and then forward to attend to new puzzles which emerge from these deliberations”. For realist evaluations, cumulation strengthens understanding of how CMOs connect together (Pawson & Tilley, 1997). Together with a focus on progressive theoretical development, cumulation can improve the formulation of middle-range theory which can “underpin the development of a range of program types” (Pawson & Tilley, 1997:116). Realist evaluators, “search for cumulation beyond the thicket of specification” (Pawson & Tilley, 1997: 119). The ultimate goal for realists is to identify and understand factors which illuminate what works. Cumulation in realist terms is often a lengthy and complex process, where case studies are conducted and analysed over time in different contexts, to extrapolate the minutiae within different programme theories.

Pawson and Tilley (1997) caution evaluators who attempt to demonstrate cumulation across case studies, as, in the social world, a multitude of different influences have the potential to impinge on the findings. Therefore, for case study site selection in this study, it was important to be cognisant of how complex social interactions make conclusions or generalisation difficult, as explained by Cook et al (1992; vii); “the causal processes that appear so essential at one time with one group may prove less

important in another". Pawson and Tilley (1997) provide a helpful example of an evaluation, drawing from the field of crime prevention, to emphasise the timeless nature of cumulation. In their example, the process leads to improved understanding of particular theoretical propositions. The example draws on case studies capturing a range of different data and research, and was useful to justify the selection of different sites for this study, in particular, to examine a clinical champion intermediary programme in case one, and a distributed model of intermediaries in case two. In addition, the findings report on data which represent enablers or barriers to the success of the CMOs. In realist terms, evaluation findings are contingent on observable conditions which are noticeable at a particular point in time. Thus, for this study, case study findings were confined to the *there and then* of the specific data collection periods. The aim of the study was to find evidence to show ways in which different intermediaries can be successful to promote best practice within the reality of practice.

5.5 Configuration building

Within each case, as opposed to cumulation of evidence across evaluations, Pawson (2013:21) discusses how configuration building is designed to support the "if-then" proposition followed in realist evaluations. In case one, the CMO configurations were conjectured, and were refined in case two. Whilst the focus of realist enquiry, the 'what works' approach, naturally lends itself to concentrated efforts to extrapolate and understand successful elements within programme or interventions, it was also important to highlight factors which, by association, could impact on the success or failure of the emerging CMOs. Pawson and Manzano-Santaella (2012) agree that only reporting positive data is not always helpful for the development of realist theories. In this study, reporting other findings contributed to a detailed picture of the sites, and could be useful for comparison with findings from future evaluation cycles.

The following section reports the findings as context-mechanism-outcome (CMO) configurations, to demonstrate their "proposition-building function" (Pawson & Manzano-Santaella, 2012: 184). This is consistent with a pattern of reporting noted in other realist evaluation studies (for example, Pittam et al, 2010). However, Pawson (2013) highlights how proposition building is not always clearly presented

in realist evaluation studies. The danger is for data analysis to result in “ingredient listing” (Pawson, 2013:26), and lack of clarity about whether emerging constructs constitute context, mechanism or outcome. In this study, to avoid this danger, the following processes were undertaken.

5.5.1 Case study one

In case study one, the CMO definitions provided by Tilley (2000) were used to provide clarity for codes and categories. In the data analysis process described in chapter four, developing the conceptually clustered matrix was useful to ensure the focus was maintained on the “if-then propositions” (Pawson, 2013: 23), and distinguish between different constructs as they emerged from the categorising process. For the analysis of interview data, the interview guide for case study one (Appendix 4.2) was helpful to ensure the focus was on extracting data that would show examples of what was working according to the participants, or how the participants identified hindrances or barriers to promoting best practice. The reading and rereading of transcripts was therefore pivotal to seeking out constructs to fit the matrix. Coding identified sub-categories that showed consistency in describing issues across the transcripts. The pattern of the relationship between different context-mechanism dyads were shown across transcripts as well as within, but not exclusive to, individual lines or participant quotations. An example is provided below (Table 5.4):

Intermediary programme Intervention	Context “what conditions are needed for a measure to trigger mechanisms to produce particular outcome patterns” (Tilley, 2000)	Mechanism “what is it about a measure which may lead to it to have a particular outcome pattern in a given context?” (Tilley, 2000)	Outcome “what are the practical effects produced by causal mechanisms being triggered in a given context?” (Tilley, 2000)
Sub-category Clinical component of role	Sub-category Presence in clinical areas	Sub-category Being watched	Sub-category Better adherence to practice
Codes e.g. Shifts Clinical work Priority Clinically based 'we go out, we do shifts' (CCa3) our role is very practical' (CCa1) 'our primary role is the work in the clinical areas' (CCa4)	Codes e.g. Working with staff Constant presence 'actually they see us all the time' (CCa4) 'if we see something that needs addressing' (CCa4) 'we just want to see ... as well how nursing staff are doing things' (CCa1)	Codes e.g. Policing Seeing Observing 'we are the eyes and the ears' (CCa1) 'people see you as like a policeman or policewoman' (CCa1)	Codes e.g. Affirming Awareness Being informed Challenging 'making sure staff are aware of what they should be doing' (CCa4) 'sometimes when fresh eyes come in and think 'well why are you doing that...?' (CCa1)

Table 5.4 Case one coding example

5.5.2 Case study two

In case study two, the CMOs which emerged in case study one were used to frame the pattern-matching process, so that the analysis framework was based on the CMOs. As presented in chapter four, the teacher-learner interview method was employed in case study two, where interviews were designed to *teach* the theories back to the study participants to make sense of their meaning (Pawson & Tilley, 1997). The interview schedule in this case was guided by the CMOs which had emerged in case one. The sub-categories which emerged in this case provided more detail about each CMO, as well as in some instances refine them showing how the pattern-matching process shaped the CMO, and how they evolved to becoming

demi-regularities (Jagosh et al, 2011). An example is provided below (Table 5.5) of the refinement process for the CMO:

<p align="center">Context</p> <p align="center">“what conditions are needed for a measure to trigger mechanisms to produce particular outcome patterns”</p> <p align="center">(Tilley, 2000)</p>	<p align="center">Mechanisms</p> <p align="center">“what is it about a measure which may lead to it to have a particular outcome pattern in a given context?”</p> <p align="center">(Tilley, 2000)</p>	<p align="center">Outcomes</p> <p align="center">“what are the practical effects produced by causal mechanisms being triggered in a given context?”</p> <p align="center">(Tilley, 2000)</p>
<p align="center">Sub-category</p> <p align="center">Presence in clinical areas</p>	<p align="center">Sub-category</p> <p align="center">Being watched</p>	<p align="center">Sub-category</p> <p align="center">Self-monitoring</p>
<p align="center">Code</p> <p align="center">Clinical presence</p> <p align="center">Be out there</p> <p align="center">Out in the wards</p> <p align="center">Frequent</p> <p>‘our role basically is to work with them, you know, help them and advise them and support them basically’</p> <p align="center">(IPCb4)</p> <p>‘ you have to be out there to understand what’s going on and to know how things really are’</p> <p align="center">(CNSb1)</p>	<p align="center">Code</p> <p align="center">Walkabout</p> <p align="center">Watching</p> <p>‘we’re watching what people are doing’</p> <p align="center">(IPCb1)</p>	<p align="center">Code</p> <p align="center">Ownership</p> <p align="center">Responsibility</p> <p>‘you do need to ...ground people and say well this is the fundamental part of your job’</p> <p align="center">(B7b1)</p> <p>‘it’s making sure that people do know the importance and understand why they’re doing it’</p> <p align="center">(B6b1)</p>

Table 5.5 Case two coding example

In the findings section, as the findings for each CMO is introduced, a brief summary is provided from the data, to reflect how the whole CMO was interpreted based on the participants’ reporting of the reality of practice. Each CMO is displayed separately to show how they emerged in case study one, and how they were built upon through analysis of case two data.

5.6 Findings

Using the chosen model of context as a guide, inner and outer contextual determinants were explored within data collected over the two case studies. (Greenhalgh et al, 2004b). Inner contextual determinants were considered as the structure of the organisation, capacity for new knowledge, features which showed receptive context for change and system readiness. Outer contextual determinants

were the degree of inter-organisational networks and collaboration, socio-political climate, external incentives and mandates and prevailing norms (University of Ottawa and Ontario Ministry of Health, 2009). The findings commence with an in-depth description of the two case sites.

5.6.1 Structure of the organisation (case one)

The chosen case study site was an urban hospital in England which belonged to a group of hospitals forming an NHS Foundation Trust, with foundation status approved in 2008. NHS Foundation trusts are explained as “*not-for –profit public benefit corporations. They are part of the NHS and provide over half of all NHS hospital and mental health services. NHS foundations trusts were created to devolve decision making from central government to local organisations and communities. They provide and develop healthcare according to core NHS principles –free care, based on need and not ability to pay*” (Monitor, 2010). Trust objectives were formed around the status of the Trust as a public benefit corporation. The hospital, with nearly 800 beds, provided medical and surgical inpatient and outpatient services and was the main local healthcare provider for around 400,000 people.

Prevailing norms

Public perception of the quality of services was important to the Trust, which pledged to commit to patients to being the hospital of their choice, as exemplified in the Trust annual report (2009/10); “*Our vision is to be ‘the hospital of choice’ for both patients and staff. This is underpinned by the quality of services we provide. A key part of delivering quality care is for our staff to live our values: care, respect, pride, effectiveness, responsibility and partnership in everything we do*”. Governance and performance systems were monitored by the independent regulator of health and social care services for England. Appendix 5.1 refers to data collected which showed how the Trust responded to commissioning bodies’ inspections relating to infection prevention and control (Da1/Da2/Da3).

Socio-political climate

To present the background to the organisation’s rates of healthcare acquired infections, the following data is reported from the HPA website (2010) which

chronicles the national infection rates at the time of data collection; *“a total of 1,898 cases of MRSA were reported between April 2009 and March 2010, representing a 35% reduction in cases from the previous year when 2,935 cases were reported. In the same period, 25,604 cases of C. difficile were reported, representing a 29% reduction from the previous year when 36,095 cases were reported. Of the total 1,898 MRSA cases reported, just over half (53%, or 1,003 cases) were among patients presumed to have been infected during their present hospital admission. The remaining 47% of cases (895 cases) would be patients who were diagnosed within two days of admission to a hospital trust or infected outside of the reporting hospital trust - in either case they are unlikely to have acquired their infection during their present hospital admission. These are patients who may have presented to a GP or directly to a hospital with the infection, were resident in a care-home when infected, or had transferred from another (unnamed) healthcare facility when the infection was first diagnosed”*.

At the time of data collection in 2011, publically available data showed that the Trust performance was maintaining a reduction in infection rates for MRSA (*“Of the 10 MRSA Bacteraemia reported in 2009-10, only 2 were post 48hrs (this means they were not incubating the infection on admission)”*), and for C-Difficile (*“The Trust recorded 126 cases between April 2009 and March 2010 a reduction of 47.1%”*) (Appendix 5.1: Da21). At the time, MRSA targets were no more than 2 post-48 hour cases and C-Difficile targets no more than 108 post-48 hour cases (Appendix 5.1: Da7).

5.6.2 Infection prevention and control strategy (receptive context for change)

The infection prevention and control strategy provided the overview of how infection control services were structured within the site (Appendix 5.1: Da21). The organisation employed specific strategies, for example, antibiotic management, deep cleaning team based within the hospital, MRSA screening for high risk patients, and management of evidence-based hand hygiene practices. For staff, a website was available, providing information on, for example, surgical site surveillance figures (Appendix 5.1: Da12).

Inter-organisational networks and collaboration and absorptive capacity for new knowledge

There were links to the NPSA ‘clean your hands’ campaign, an e-learning programme for staff, infection control policies, and induction training. The facilities cleaning company, working with the Trust since 2000, offered an industry recognized cleaning qualification for cleaning and catering staff, as illustrated by this excerpt from the company magazine; “BICSc is an independent body with members in all areas of the cleaning industry. It is the largest professional and educational organisation offering a range of courses, schemes and certification” (Appendix 5.1: Da17). For patients, information posters were visible in clinical areas (Appendix 5.1: Da15). Pocket size leaflets disseminated around the hospital outlined the Trust’s commitment to infection prevention and control (Appendix 5.1: Da18). Documentation in use within the Trust reflected national guidelines (for example, care pathways for C. Difficile and MRSA), care bundles (for example, peripheral intravenous cannula, and urinary catheter), and scoring system (for example, visual infusion phlebitis: VIP). The Productive Wards initiative (NHS Institute for Innovation and Improvement, 2010) was operational throughout the hospital, to ensure safer care through a focus on quality and value, building capability, commissioning, tools, products, networks, and leadership.

5.6.3 The Infection Prevention and Control team

The Director of Infection Control and Prevention (DIPC) took responsibility and accountability for the infection control team, and regular reporting and communication was noted between them in documentary evidence (Infection control and hand hygiene training policy –Duties and Responsibilities Appendix 5.1: Da5). Figure 5.1 provides an overview of the structure of the IPC team and the roles that were in existence, with the number in brackets denoting the number of roles:



Figure 5.1: Overview of the structure of the IPC team (case one)

The planning of the build of the hospital had included a substantial number of side wards (total of 316) for clinical areas, and a decontamination unit (*“Patients who are found to have an infection are usually nursed in side rooms in order to prevent germs being passed onto other vulnerable patients”* (Appendix 5.1: Da16). In the clinical areas, matrons had clinical responsibilities for groups of wards, beds, waiting lists and capacity (*“Matrons have responsibility within their area: to monitor the application of infection control practices within their areas of responsibility”* (Appendix 5.1: Da5). Infection prevention and control responsibilities were specified within the matron’s job description and monthly matron ward audits were conducted. Matrons were accountable for providing a safe and clean care environment, as illustrated by this participant:

“My role is around making sure the environment is clean, tidy, that we manage any infection control risks, that we manage the patient group in terms of if we’ve got infection in any of the areas. We do monthly Matron audits of the environment and all of the quality standards. I have all the Saving Lives information that comes to me, so I’ll pick up any areas that

are struggling and try and put in some additional support for them”

(Ma1)

For infection prevention and control, the matron role was supported by deputy matrons, a range of lead and clinical nurses, healthcare support workers, cleanliness support workers and infection control link nurses. Infection control resources observed in clinical areas during data collection periods reflected those used nationally and globally (for example, posters, reminders, leaflets, clean equipment labels (for example, Appendix 5.1: Da15/Da16), and the Trust had also invested financially in the team, as recognised by this participant:

“They have invested hugely. I mean the team when I first started was two...was two people, bearing in mind that was eleven years ago, when I joined the team. Now bearing in mind now, if you look at it now, we’ve got three nurse specialist, we’ve got a consultant nurse, we’ve got four champions and we’ve got two surveillance nurses. I think there’s been a huge monetary investment in the team, yeah” (CNSa1)

5.6.4 The intermediary programme (system readiness)

In this study, a programme is defined as; “any novel intervention or project aimed at improving the states of affairs” (Timmins & Miller, 2007: 15). As part of the Trust’s response to implement the Saving Lives audits, and raise performance levels, a clinical champion intermediary programme had been conceived and implemented across the hospital. The post holders were expected to contribute to the organisation’s infection control agenda, to help reduce the rates of infections and support the Trust’s strategy to implement policies and procedures for infection prevention and control. An expectation outlined in the post description was to; “challenge poor practice amongst all healthcare workers and implement changes in procedures to improve compliance” (Post description Appendix 5.1 Da6). The programme consisted of a small number of qualified nurses with specific responsibilities for infection prevention and control, who were based in clinical areas. The initiative was initially funded by the Strategic Health Authority in 2007, for a period of six months, to try and raise awareness of the importance of infection control practices in clinical areas:

"I mean it was born out of this initial approach, and it was sort of what moved on from there. It was an investment in infection control and the original implementation of that approach was very much a kneejerk reaction in response to quite difficult performance on that. And so they were put in for an initial period of time, and very much about trying to raise the awareness within ward areas. And then I think the whole approached worked, I mean we also opened an isolation ward, and we ran that for a significant period of time. The staff we got in there developed a level of expertise; they were well supported by the infection control teams and the champions, so we started to get better results, started to see that we could make improvements...So, from an initial six months kneejerk reaction, the positives that came out of using the champions in that way were that they clearly were having an impact."

(MRa1)

The job description demanded certain skills from the champion intermediaries, for example, expectations for them to act as role models, lead on education, and to ensure that clinical practices were based on best evidence (Appendix 5.1 Da6). One matron participant reflected on the skills required of the champions in dealing with people:

"...it's that ability to challenge and say, "Actually I am a senior nurse", you know, "I'm not asking you now, I'm telling you, you need to gel your hands before you come onto the ward" or whatever. And they have the ability to do that. They also have the skills and...and the people skills that they need to deal with... because they can't keep coming down heavy handed, I actually don't think you get the best from people like that" (Ma1)

Manager participants reflected on how useful the champion intermediary programme had been initially to help develop ward-based initiatives that enabled clinical staff to identify problem areas and meet organisational targets. For example, the champions used traffic light systems to feedback on staff performance, and developed educational packs to raise awareness of the importance of audit (Appendix 5.1 Da6). However, after the initial six months period, the nature of the role was changed, and

the champion intermediary programme post-holders joined with the infection control team. The decision to make the intermediary programme permanent within the Trust was led by pressure from the clinical areas, and was instigated by the need to ensure infection control issues were kept prominent in people's minds.

5.6.5 Programme post-holders

At the time of data collection, there were four champions based within one hospital, all registered general nurses employed at band six, and responsible to the CNS for infection control. Documentation evidence in the form of job descriptions (Appendix 5.1: Da6) indicated that the main responsibilities of the post were to contribute to the infection prevention and control strategy through the provision of advice, conducting audits, and providing education and administration support. Additionally, their responsibilities extended to liaising with staff in clinical areas "to work alongside clinical staff for one shift per week to keep own clinical skills updated and at same time monitoring staff practice regarding infection control" (Appendix 5.1: Da6). The focus of their work was clinical, however, for the champions, being integrated within the structure of the infection control team was important for them, to ensure that they had access to support:

"So I think it's really important to have a good firm, solid team in infection control. Especially because it's...it's such...it can be a challenging job...because of the things you face, you know, the challenges you have to make, and the sort of confrontation. So it helps to have a good strong team to sort of support you" (CCa4)

5.6.6 Structure of the organisation (Case two)

Case two was purposefully chosen to examine the infection control structure and strategy of a single NHS organisation covering a large geographical region in Wales. In Wales, 1000 Lives, and 1000 Lives plus (2012) have been instrumental in providing examples of improvements in patient safety, and the campaign continues to strive for change in areas where harm can be avoided, including the reduction of HCAs. To augment this, the Welsh Government produced a strategy for Hospitals in Wales (WAG, 2004) with strategic objectives to be met through national standards, availability of specialist support, training, staff accountability, and the

placing of infection control firmly within the management agenda. The Welsh Government published its commitment to eliminating HCAs in December 2011, heralding a change of strategy from focusing on controlling and reducing infections to a directed campaign to eliminating HCAs (WG, 2011). As reported by Public Health Wales (2011), a point prevalence study conducted in 2011 found that “the prevalence of *Clostridium difficile* in Wales was 0.5% (42/9094); 0.5% in the acute sector and 0.3% in the non-acute sector. The prevalence of Meticillin Resistant *Staphylococcus aureus* (MRSA) BSIs was 0.1% across Wales (5/9094) (Appendix 5.2: Db21). All cases were identified in the acute sector”. In 2011, the total number of C Difficile infections for the Health Board (case two) was 599, and the rate of MRSA infection was recorded as 8 per 100,000 bed days (Public Health Wales, 2013).

The chosen organisation was characterised by a heterogeneous rural and urban profile. Formed through a merger in 2008-9, the health board provided services to a large population of around 600,000 people across six counties. In 2009, the structure of the NHS in Wales underwent a radical change in order to plan ahead for delivery of healthcare services in an era of constantly increasing challenges around resources and financial support. In Wales, the government decided to reorganise NHS Wales, creating single local health organisations (health boards) with responsibilities for delivering a healthcare services in specified geographical area, rather than the previous arrangement of Trusts and Local Health Board (Health in Wales, 2013). Acute services were provided by three district general hospitals (DGH), supported by around twenty other smaller hospitals and a range of outpatients departments and clinics. The organisation employed around 16,000 staff. As in case study one, the embedded units within the case study were clinical areas and wards (Chapter four: Table 4.1). Data were collected over a four month period in 2012.

5.6.7 Infection prevention and control strategy (receptive context for change/absorptive capacity for new knowledge)

At the time of the study, clinical services for the site were provided through eleven newly formed clinical programme groups (CPGs) which managed clinical services for different medical and nursing specialties, each led by a chief of staff. Infection prevention and control was managed under the pathology CPG. Infection prevention

and control teams were situated at each of the district general hospitals. The management of infection control in clinical areas formed part of the matron's clinical responsibilities. The introduction of the modern matron role within the organisation's nursing strategy (2011/2012) was a recent initiative, and the role superseded previous clinical and managerial positions across the DGHs. Senior nurses were "expected to be visible and rostered so that they are easily accessible to support junior staff throughout the day, week and year" (Appendix 5.2: Db15). There were expectations on the part of participants that the matron role would frequent clinical areas:

"we obviously see the bigger picture and its less about the word, and more about the person, and how dynamic and you know, I think my expectation is that they are, I would hope that perhaps they (the matrons) would be in uniform and that they would be more of a clinical presence to make it work" (CNSb1)

During data collection, work was in progress to develop a range of national transmission based precautions policies. At the time of data collection, national surveillance figures were collected to provide reports for different HCAIs. In addition, surveillance reports produced by the organisation were freely available reporting on bloodstream infections, hospital outbreaks, and clostridium-difficile infections. As mentioned previously, national programmes and policies guided the IPC management within the organisation. The current programme guided the infection prevention and control strategy of health boards, designed to reduce risk and improve quality of care across NHS services nationwide.

Socio-political climate

National initiatives were in place to continue to reduce the risk to patients from HCAIs. These included reducing catheter associated urinary tract infections, reducing harm from peripheral venous cannula, hand hygiene compliance and compliance with antimicrobial use (1000 Lives Plus, 2013). As a response to the national guidelines, the organisation had put into place local policies and strategies (for example, hand hygiene audit Appendix 5.2: Db16). There was evidence of infection control resources noted during observation periods and collected as

documentation evidence which were designed to remind people of the correct procedures, and reiterate the organisation's zero tolerance approach to HCAs. For example, the organisation had printed a patient's guide to Clostridium Difficile (Appendix 5.2: Db4) which explained the nature of the bacterium in lay terms, and provided information on detection and avoidance in hospital settings. Study participants reflected on the purposes of specific resources, for instance, hand hygiene posters in ward entrances:

"it's a big poster trying to encourage, you know, the public to do it, because sometimes we haven't got the time to stand there and say " wash your hands"(B5b1)

There was evidence that clinical areas had developed their own resources, for instance, patient transfer sheet (Appendix 5.2: Db17), ward welcome packs for patients and relatives (Appendix 5.2: Db10), and reminder notices for families and carers (Appendix 5.2: Db12). However, notices and signs were not always heeded by members of the public:

" you just have to keep on saying to every member of relative that goes in, please wash your hands, please use the hand hygiene and everything like that, I think we are getting a lot better at telling the relatives to make sure that they do use the hand rub and things like that" (Mb1)

Information about specific resources were collected through documentation evidence and observations. There was evidence that the organisation had recently introduced an integrated care pathway (ICP) for clinical areas (Appendix 5.2: Db5), as one component of the C- difficile protocol, and provided guidance for nursing and medical staff for managing the infection. Participants shared their views on the introduction of the pathway:

"I like the pathway, cos if I've forgotten anything in a hurry, as you do, it's like a tick box isn't it, you can make sure you've done everything, like, if bloods haven't been done, you know, you need to order them and they go out don't they and you can check it through that way, and it gives you more support with the doctors as well, so we need this, this and

this doing, if they've not had bloods done in so many days they need doing" (B5b4)

5.6.8 The distributed intermediary roles (system readiness)

The organisation employed three infection prevention and control teams, each based at one of the three district general hospital. For each hospital, the teams comprised of a clinical specialist nurse, supported by a number of band six and seven infection control nurses and administration staff. The teams liaised regularly with other colleagues with specific responsibilities for infection control, for example, microbiology, pharmacy, matrons, ward managers, housekeepers and domestic cleanliness staff. During interviews, participants provided examples of individuals with specific responsibilities in infection control who they considered to be operating in an intermediary capacity. These data were illuminating as it became clear that the different participants had their own views on what they considered to be essential intermediary criteria:

"for all sorts of reasons, particular people who, just stand out, they seem to have an interest or a flair or a keenness and they are the people for whatever reason that maybe phone you more on a regular basis and you have, maybe a better relationship with because you know what you tell them they will remember and they will carry it through cos there's that trust issue" (CNSb1)

In case study two, data collected showed how the organisational structure for infection prevention and control included a range of distributed intermediary roles who had specific responsibilities contingent on the remit of their role, and highlighted the organisation's different approach to case one. People who were described by study participants as acting in an intermediary capacity for infection control across the organisation in distributed roles were ward managers, infection control nurses, matrons, link nurses, and champions. In case two, ward managers were often the first point of contact for infection control issues for frontline nurses, and other staff such as housekeepers and the infection control team:

“I think I would go to either a Sister or a nurse in charge first, because I just feel they would, perhaps know what I wanted, if they didn't know, well then I would try to find, contact the Infection control” (Hb2)

“I would say probably the ward sister or charge nurse, whoever's in charge” (CNSb1)

Infection control nurses operating in the case site had specific responsibilities for *“developing and maintaining strategies for the prevention, surveillance and monitoring of healthcare-associated infection”* (Appendix 5.2: Db19). Interview data showed how infection control nurses were accessible to clinical staff:

“we've got email, phone contact and they're a visible presence almost daily on (name of ward)” (B7b1)

“yeah, yeah, cos I often see them (IPC nurses), I see them on a daily basis and I know that I can go to them for advice on anything, you know” (Hb2)

Matrons were also perceived as an important intermediary role for infection control:

“I would hope that perhaps they would be in uniform and that they would be more of a clinical presence to make it work” (CNSb1)

“ the staff is now starting to think, ooh, she's (Matron) on the ward, we'd better do it to a certain standard, you know, because I will pull them up otherwise and I think that's important that I go on there and I demand of the staff a certain hand hygiene or tidiness of the ward” (Mb1)

Infection control champions/link nurses were included in guidance provided for organisations within Wales (Db20). In the case site, champions were identified in a clinical unit initiative where a lack of ownership of infection control audits had been identified. In one embedded unit, clinical nurses who had been given informal designation by their managers to champion infection control:

“ a ward initiative, really, we call them champions, we call them hand washing champions, and they weren't coerced into it, they were asked

because they'd happened to have been on the course at the time, and they're strong people, I think you've got to pick the right type of make-up of someone, you've got to pick people that aren't scared to approach people and they took ownership of it" (B7b1)

This was found to be an informal arrangement developed at ward level, supported by the ward managers, which was different to the formally mandated champion programme used in case one:

" I think the key is encouraging champions in your area, I think that's the key, that's what worked for us" (B7b1)

"they are our champions for infection control...they're the ones who will do the audits and, you know, they'll flag up, obviously everyone chips in with flagging up...but they are ones responsible for doing the audits and chasing everything up really" (B5b1)

In data reported through interviews, participants described the champions as proactive individuals who could challenge practice when required:

"so I asked two of our band fives who had recently been on an infection control day whether they would champion and take ownership of the audit which they have, they rotate the audit between them, and they're quite strong people, they will tackle consultants down to porters, anybody really, and they are quite proactive" (B7b1)

From the perspective of the ward manager, the band five champions were promoted as role models, in an effort to improve engagement with infection control audits in the clinical units. The champions had been asked to take ownership of the ward audits, to support the organisational strategy and meet targets. Data reflected the way participants made positive links between the champions' clinical role and the potential impact on the practice of others:

" they are very good role models themselves and people can see they're Band 5's and they're doing it and people become more engaged with it" (Mb1)

In essence, the findings uncovered contextual features which outlined similarities and differences between the two case sites, as summarised in Table 5.6:

Case 1	Case 2
<p><i>NHS Foundation Trust hospital in urban location providing care for 400,000 people in England which pledged to commit to be hospital of choice for patients</i></p> <p><i>Infection prevention and control strategy with Director of Infection Control and Prevention responsible and accountable for infection control team</i></p> <p><i>Consultant nurse for IPC</i></p> <p><i>Established matron role with responsibilities for infection control</i></p> <p><i>Clinical champion intermediary programme for IPC embedded within infection control team</i></p>	<p><i>Health Board characterised by heterogenous rural and urban profile providing care for 600,000 people in Wales</i></p> <p><i>Infection prevention and control strategy managed under clinical programme group</i></p> <p><i>No consultant nurse role for IPC</i></p> <p><i>Matron role recently introduced to supersede clinical and managerial positions across the hospitals</i></p> <p><i>Distributed intermediary roles for IPC, not always embedded within infection control team</i></p>

Table 5.6: Summary of main contextual features - similarities and differences

Over the course of the two case studies, four final CMOs were formed, summarised in the table below. The table shows the inter-dependency between the specific contextual conditions and the mechanisms, and how the dyads lead to outcomes:

CMO 1:

Context: Where programmes bring intermediaries in close proximity with clinical staff and there are high levels of clinical presence, this enables the intermediary to watch practice as it happens through overt and covert visibility, and there is an enhanced sense of being watched on the part of clinical staff

Mechanism: clinical staff fear being caught out, or not being seen to play the right part in infection control practice

Outcome: promotion of self-monitoring, and better adherence with best practice in infection control

The success of the CMO is hindered where there is less opportunity for intermediaries to be present or visible, or where intermediary presence is less obvious and consistent. The CMO could also be hindered if clinical staff become complacent if they are too acclimatised to intermediary presence

CMO 2:

Context: Intermediaries operate in clinical areas with individual approaches and style to build relationships, and use authority where required where there is non-compliance in infection control practice

Mechanism: staff believe they are being individually supported through the pressures of clinical practice

Outcome: clinical staff comply and are motivated to act according to policy and standards and there is an atmosphere of collegiality in clinical areas

This CMO is hindered where individuals are reluctant to change their behaviours or have negative attitudes

CMO 3:

Context: Infection control practices are known and seen as high organisational priority and intermediaries provide feedback in a sensitive way which is both positive and reinforcing

Mechanism: clinical staff are stimulated through guilt or shame to recall what they should be doing, and reflect on their own practice

Outcome: Staff are motivated to practice correctly and good habitual behaviours are promoted in infection control

The CMO is hindered where lack of investment in staff and lack of time to enact the

organisation's policy and strategy are identified

CMO 4:

Context: Intermediaries provide practice based education for clinical staff, incorporating fundamental elements, to counteract lack of priority or time for formal training and learning is made more real and meaningful for clinical staff.

Mechanism: staff are consistently reminded of the sense of relevance to their own infection control practice

Outcome: heightened awareness of infection control practice in clinical areas

This CMO is hindered by the challenges of providing infection control education within busy and often chaotic clinical areas or if there is lack of priority given to infection control education, or where, in the absence of intermediaries, there is reliance on reciprocal learning by clinical staff which may or may not be reliable

Table 5.7 Summary of final CMOs

5.7 Interpretive findings - the CMOs

From the data, four CMOs (context (C), mechanism (M), outcome (O) configurations) or theories, emerged to answer the question of how intermediaries change the reasoning or behaviour of others to promote best practice in infection control, in which circumstances, how and for whom. As previously discussed, CMOs provide the theory about what is working (Pawson and Tilley, 1997). In case one, the CMOs provided insight into what was working in a setting which included a clinically embedded champion intermediary programme. The purpose of the second case study was to refine and show how the CMOs had explanatory potential in a setting where a different infection control strategy (including a more distributed approach to intermediary roles) was in place. Pawson and Tilley (1997:135) describe this process as essential, to ensure “real progress is obtained” in the quest to build explanatory theory. In case two, the organisation used a different approach to their infection control strategy where intermediaries in different roles promoted infection control practice. The four conjectured CMOs drawn from case study one were built upon and refined in case two, using pattern-matching analysis. Whilst many

elements within the CMO patterns were similar and resonated with each other, some differences also emerged. Whilst data collection and analysis using pattern-matching was useful to focus attention on the testing and refining of the CMOs, data also showed findings indirectly related to the CMOs, so that data collection and analysis were not constrained by the realist framework. For example, data emerged which helped to understand specific factors which could hinder or enable the success of different CMOs. In the next section, the conjectured CMOs from case one are reported first, and evidence is presented to illustrate the elements within each conjectured configuration. For each CMO, the findings from case two are then presented, to show how the configurations were built upon and refined by additional data from a different context.

5.8 CMO 1

Conjectured CMO:

Context: High levels of intermediary clinical presence and where programmes bring intermediaries in close proximity with clinical staff enables them to watch practice as it happens through overt and covert visibility

Mechanism: clinical staff want to be seen to play the right part in infection control practice.

Outcome: better adherence with best practice in infection control

5.8.1 Clinical presence and proximity with staff (case one)

In case one, the organisation had engaged with the champion intermediary programme, and although the numbers of role-holders were small, the design of the programme with focused attention on their clinical function resulted in a high level of presence in clinical areas. By virtue of their high levels of clinical presence, the champion intermediaries worked alongside clinical staff on a daily basis. This provided them with opportunities to watch practice and intervene when required so that infection control risks were minimized. The champion intermediaries were privy to an overview of clinical practice. The salient feature of the role of the clinical champions in case one in was the requirement, as outlined in their job descriptions to

operate in clinical areas; *“to work alongside clinical staff for one shift per week own clinical skills updated and at the same time monitoring staff practice regarding infection control”*(Appendix 5.1 Da6). One intermediary used the “shop floor” analogy, to explain a sense of belonging in the frontline of health care, but not as members of ward teams:

“So that’s how I think our role is; it’s kind of like...we’re shop floor but...we’re not shop floor” (CCa3)

“because you’re constantly on the ward area, and that was the idea of it in the first place” (CCa4)

The clinical element of the role meant that the champion intermediaries were routinely present in clinical areas with each intermediary having responsibilities for groups of wards, and this extract shows how clinical staff would be accustomed to seeing the intermediary in their clinical areas regularly:

Sam –we start visiting the wards and clinical areas that CCa2 is covering today. Throughout the morning we visit medical wards, high dependency unit, oncology, intensive care, neonatal ward, theatre and surgical day ward. CCa2 liaised with nursing staff, theatre staff, patients and relatives (in paediatric ward). She checks MRSA and stool charts and follows up MRSA screening for patients, and checks equipment in the sluice in one ward. Conversations with staff include ‘bare below the elbows’, and giving specific advice for theatre staff. (Field notes 28/1/11).

Whilst ward visits were prioritised according to infection reporting and risk, the champion allocated to a particular ward or clinical area was generally present daily. In addition to visiting the wards and clinical areas, liaising with staff, teaching and providing information and support, another component of the role was working shifts. Examples were noted of how the champion intermediaries utilised the different parts of their role according to demand from the clinical areas, enhancing their presence in clinical areas at varying times, and increasing their overall proximity to practice where required. The following extract shows how clinical staff were familiar with seeing the intermediary in the clinical area, and understood the clinical component of their role:

0800-12.00. On one medical ward, CCa4 helps out on the ward as they are particularly busy. She sees one patient who has an intravenous line which needs flushing and dressing change. She points this out to a member of nursing staff and offers to do it as the ward is at a busy time. There is interaction with the bed manager about a patient who is going home today, and needs an iv line removed – Cca4 offers to do this whilst she is there. (Field notes 19/1/11).

The clinical function of the champion intermediary role was explained by one participant in this way:

“we go out, we do shifts, but even when we’re not doing shifts we go out...if we see something that needs doing or...whatever, or they want some help, we’d go and quite happily apron and gloves on and muck in and ...that’s part of the job. And it keeps you in with your nursing sort of background, and it builds up the sort of relationship you have with the other staff, because if they see you doing it, they sort of think ‘Oh well you can’t be that bad if you’re willing to put a pair of gloves on and an apron and come and muck in’. (CCa3)

Through their proximity to clinical staff and their presence in clinical areas, the champion intermediaries associated themselves with being close to clinical staff in practice, and staff reported how they were familiar with seeing them in the clinical areas:

“I think initially it was almost, “Oh no Infection Control are here. I bet they’re going to check the commodes. I bet they’re only here to..., you know, and it was almost like they were infringing on us and...”They’re only here to find out the bad things”, whereas actually now (name of champion) wanders very freely through and it’s “Oh (name of champion), I’m glad you’re here, I just need to ask you about so and so”. So there’s been a real culture change” (Ma1)

Field notes recorded examples of this, whereby the intermediaries were observed visiting different clinical areas. Clinical staff were accustomed to seeing them in clinical areas, which triggered them to want to play their part to adhere with best practice in infection control:

We are on a busy medical ward and I note how much interaction goes on between CCa4 and staff during the morning. She speaks to doctors (asking one to remove his watch which he does), a cleanliness support worker about equipment, nurses, bed manager, ward clerk, and patients (to check cannula site). She discusses a cannula education pack and completion of ward audit with nursing staff. There is a lot of social interaction with staff she knows, and there is a lot of explaining and reassuring. She doesn't want to embarrass medical staff she says (re the watch) and tries to deal with it sensitively. (Field notes 19/1/11).

High levels of clinical presence meant that clinical staff were aware of being watched in practice, and this, according to the intermediaries, facilitated their own work, especially when they needed to challenge:

“And because they see us all the time on the ward they sort of just get used to us being there and it then becomes a lot easier when challenges need to happen because they don't feel threatened and you're almost part of the team anyway” (CCa4)

Through high levels of physical presence and close proximity to staff in clinical areas, champion intermediaries were able to assess infection control practice as it happened, and were familiar with the constraints that affected clinical staff, especially where routinized practice or lack of time were the influencing factors cited for not adhering to best practice:

“ I think if you listen to anybody on the ward, that's what they'll say, 'I didn't have time, its' not an excuse, and I will never excuse time, but that is the excuse you hear nine times out of ten, 'I didn't have time'. You hear the excuse from doctors with cannulation, they can't feel the vein so that's why they don't wear gloves. They didn't see the sign, which is a big yellow...and on the door, so you know, you can't...if it was a tiny, tiny sign, alright then, but you know, there are signs on the door' (CCa4)

5.8.2 Clinical presence and proximity (case two)

In a similar way to case one, there was agreement that high levels of physical presence by intermediaries in distributed roles was important for promoting better adherence to best practice:

“I think they definitely make a difference either way don't they, cos their presence, at least then people know that they're around and there to help and stuff” (B5b4)

We visit a busy orthopaedic ward in the morning and the infection control nurse talks to the ward manager, staff nurses, patient and carer and medical doctor. She checks alert stickers in patient records and discusses completion of e-learning educational pack with staff. She walks around the ward, checking written information and equipment left by doors of single rooms, and looks into the treatment room. (Field Notes 23/4/12).

In case two, a recent appointment in the organisations, matrons (previously called clinical nurse managers within the Health Board) were encouraged in the Nursing and Midwifery Strategy to show high levels of presence in clinical areas: *“senior clinical nurses will be in uniform at all times to enable them to practice easily where necessary. Senior nurses will be expected to be visible and rostered so that they are accessible to support junior staff throughout the day, week and year”* (Appendix 5.2 Nursing and Midwifery strategy Db15). Ward managers were described as incorporating high levels of presence into their clinical responsibilities to make sure that clinical staff were playing their part and adhering to best practice in infection control:

“ day to day, we don't do it every day, but we try and have a walkabout, just to make sure everything's clean” (B6b2)

Where, in case one, the champions programme role-holders had unique responsibilities for infection control, in case two, distributed intermediaries such as the ward managers had responsibilities for overall management of the ward, which included infection prevention and control. In case two data, ward managers reported

in which ways they made the effort to maintain high levels of physical presence in their clinical areas to ensure that clinical staff played were enacting good practice:

“ it’s also leading by example, because I’ve just worked a week of nights because I think you’ve got to be clinical as well as managerial and if you’re not showing good practice nor will your team” (B6b2)

For matrons, high levels of physical presence on the wards allowed them better opportunities to be vigilant and uphold standards of care, but also promoted better adherence with standards because clinical staff wanted to be seen to be doing the right thing:

“and learning from each other, yeah, and you know, just the fact, that well hopefully, they see me doing the right, you know, procedures or whatever, you know, making sure I’ve washed my hands and everything like that because I’ve got to be the example, I’ve got to set the standard, and they’ve got to know that I will always maintain that standard, so it just encourages them to do the same, I think” (Mb1)

In case two, data showed how, at times, there were less opportunity for distributed intermediaries to be present in some clinical areas due to pressures of work or their work locations. Less opportunity to be present and visible was perceived to hamper the success of the intermediaries’ work. Data collected from some participants reflected how they were not always able to see the infection control intermediaries as often as they would like in clinical areas:

“ and obviously we don’t see any infection control nurses or anything like that so we do tend to have to go off our own back and...we’re accountable at the end of the day” (B5b3)

“more of us (IPC nurses) would be good and to be able to be out there” (IPCb3)

Being present in clinical practice was generally considered to be essential to enable swift action to be taken on infection control issues, and less consistency of presence was not as effective, with their presence being more sporadic, described by one intermediary participant as ‘fire-fighting’. There was recognition that being able to

be in clinical practice was not always achievable, due to the small numbers of people in appointed roles, and the number of clinical areas they had responsibilities for. In case two, different approaches had to be employed to counteract the lack of opportunities to be clinically present. For example, in circumstances where there was less opportunity for intermediaries to be in clinical practice, communication technology was used. Infection control nurses reported how they mostly relayed audit results and messages for ward staff by email, telephone and the internet. Making judicious use of technology helped different intermediaries to maintain regular contact with clinical staff, to ensure that infection control issues remained on the radar. However, communication technology was not considered by participants to be as effective as physical presence to keeping an eye on practice.

5.8.3 Overt and covert visibility (case one)

In CMO 1, high levels of presence and working alongside clinical staff enabled intermediaries to enact visibility, and opportunities to watch practice in both overt and covert ways. In case one, data was presented to show that clinical staff were actively aware of the overt visibility of the intermediaries, and conformed because they feared being caught out:

“People see you as like a police...policeman or policewoman...They see you as...here comes infection control, and that’s why I actually said to you this morning, no doubt, somebody’s probably (whispers) “infection control”. And if you get to know the staff enough, that’s why I’ve said I’ve tucked my horns in...because I know what they’re thinking, “here comes infection control” (CCa1)

“because if (name of champion) comes down, that’s us gone down because she’s found that dirty commode” (CSWa1)

Observation data reflected the importance of the impact of overt visibility. In case one, field notes extracts from observation periods undertaken with different champion intermediaries illustrated how overt visibility triggered a change in the behaviour of clinical staff who conformed in fear of being caught out:

We walked onto a surgical unit and two members of nursing staff were standing behind the nurses' station as we entered. I observed one of the individuals had long hair which was untied –as soon as she saw CCa2, she reached back to tie up her hair in an instinctive action –she recognised CCa2 immediately (Field notes 28/1/11).

In another example, data illustrating how it was the intermediary (and not other members of ward staff) who was instrumental in facilitating immediate change in the behaviour of a healthcare assistant who did not want to appear to be caught out when noted to be wearing nail varnish on duty:

Accompanying CCa1 onto a medical ward, she noted a healthcare assistant who had nail varnish on her fingernails, and approached her straight away to remove it, so it was dealt with immediately and discreetly (Field Notes 21/1/11).

Interview data from the follow-up interview with CCa1 subsequently explored the incident in more depth:

“...this morning, it sends out the wrong signals, with the nail varnish. So again, there was a link nurse on, the link nurse was actually working on the same station as that (healthcare assistant)...but then maybe the link nurse feels frightened to say anything. We have link nurses come to us and will say “I’m a bit scared to say something”, we’ll go and actually say it, do you mind, and I’ve said to a person “Would you mind taking it off”. (CCa1)

In interview data, champion participants often described themselves as being the “eyes and the ears” for infection control, and because clinical staff were aware of being watched, or did not know when they might be watched, there was more likelihood of adhering with best practice in infection control:

“And that’s another reason why, you know, I feel that the champion’s role is quite good, because we’re always there to see these things, we’re always there to see if doctors are coming on, if they’re using the hand gel, if they are bare below the elbows, and nurses, if they’re wearing

wrist watches, they've got jewellery on and ...so we're sort of the eyes and ears on the wards really" (CCa4)

The data reflected the champion intermediary's ability to view different angles of practice (which could otherwise be missed), because they were present so intently:

"it's an eye opener, going out there on to the wards, and actually seeing what's going on there" (CCa2)

Clinical staff welcomed their presence, even when the intermediaries were covertly watching them:

"we just want to see...as well how nursing staff are doing things. For example, we go round and we'll wash a patient, but the staff are 'Oh great, she's washing the patient', but we're seeing how they dispose of that...bowl of water...are they tipping it down the hand wash sink...are they tipping it down the toilet...so that's our...our role a lot." (CCa1)

"So I'm doing an assessment as we go along...all the time, it's almost sort of...it's not being judgemental, but it's judging what they're doing" (CCa1)

5.8.4 Overt and covert visibility (Case two)

In case two, whilst the consistency of intermediary presence in clinical areas took a different approach, the impact of visibility through overt and covert approaches resonated with the first case. Data reported how intermediary participants could see what was going on in clinical areas, through being visible in ways described as 'huddles in bays', or 'walkabouts':

" so yeah, the constant, continual contact with them (IPC nurses) just keeps the patients safe through making sure that if any changes need to be made that you can work together to do that so the plan of care that you've got continues and can change by the contact you've got with them" (B6b1)

Covert visibility enabled different intermediaries to watch practice as it happened so that they could see what was going on, without clinical staff changing their behaviours because they were aware they were being watched:

“ the key is not telling people you’re going to do it because, you know, they’ll change their behaviour because they know you’re looking at them, its, in a way you’ve got to be a bit surreptitious haven’t you, you’ve got to just blend in and not let anyone know and see where we’re falling down” (B7b1)

“but what we’re doing quite often at the same time as reviewing a patient is that we’re watching what people are doing” (CNSb1)

“so you’ve got to make sure they’re doing it all the time, whoever’s there” (B6b1)

Data showed that, when intermediaries in distributed roles were visible in clinical practice, this increased their ability to watch what people were doing, and immediately evoked a change in behaviour on the part of clinical staff who conformed as they wanted to be seen to be playing the right part. Where clinical staff were less accustomed to intermediary visibility, they were concerned that they could be caught out when infection control intermediaries were visible to them:

“ and you notice it in certain areas, an example would be the places we don’t frequent, because we’re always on the medical/surgical wards, if we go, say up to the (names unit), which perhaps we don’t need to go there as often in terms of following up patients with infections because they’re not in patients are they, they’re like day patients really, aren’t they, so, and we notice it when we go up there, say, when we went to do our last general audit, and we thought right we’d do some hand hygiene audit as well while we’re here, and we watched for the first ten minutes everybody was washing their hands, it was like there was a queue at the sink, and you just think, we’re all smiling at each other thinking, yeah, yeah, we know what this is about, whereas if we went to a medical ward, they’re used to seeing us day in and day out. Its, you don’t see that

pattern of behaviour there, it's almost as if we're part of their staff
(CNSb1)

In case two, the findings uncovered the fine balance required in order to avoid complacency where clinical staff could potentially become too acclimatised to the intermediaries' presence:

"people notice you, but the thing is they only notice you for a while cos if you go there regularly enough they think 'oh yeah, the nurses are here, they've come to review a patient" (CNSb1)

"because they're so frequent now, and we've put a lot of things in place which the girls (ward staff) have come up with themselves, for prevention of infection, that they just see them coming on the ward and they don't think they're coming here now to spy on them, or to check them or to do this, that and the other, they're very good, we've got a good relationship with the infection control team now" (B6b1)

Across the case, visibility led to better adherence with infection control practices through individuals not wanting to be caught out and wanting to be seen to be playing the part:

"I just think they're more cautious, I would say (clinical staff), because, I don't know if they do, but I mean I think that, you know, they're on the ward, they might be there to do something specifically, you know, be writing in people's notes, but they constantly know what's going on around them, and I think that, you also know because they're in a different uniform as well" (Hb2)

Intermediaries discussed how overt visibility worked to ensure that clinical staff adhered to infection control guidelines and standards and they conformed more easily because they feared being caught out:

"right, the infection control nurse is here, better behave, better think what I'm doing" (CNSb1)

“I’ve noticed more people if they know the audit’s being done...I think people make a bit more of an effort then, rather than when someone just happens to walk on the ward” (B5b1)

In case two, data showed how overt intermediary visibility led individuals to monitor their own practice and adhere with infection control guidelines and policy as they wanted to be seen to be playing the right part:

“sometimes you’ll catch them (intermediaries doing audit) just there with a piece of paper you sort of click on, actually they’re watching me now so it’s when you’re actually thinking, they’re watching me now”(B5b1)

“I think their presence is quite significant because if they haven’t done obs, if the bloods haven’t been done, if things aren’t quite right, the staff are sort of a bit...I think them walking on the ward does help because it makes staff more aware, “oh my gosh, I haven’t filled the stool chart, or I haven’t done this or I haven’t done that” so it’s making sure things are done” (B6b1)

As a result of the overt and covert nature of visibility enacted by intermediaries, clinical staff were more likely to monitor their own behaviours and adhere with best practice for fear of being exposed or caught out:

“because sometimes, you’ll be standing there, you know, looking, doing something with the notes or something, and somebody will come out of an isolation room with pinnies and gloves, they see you, and they go straight back in, now, to me, that’s made a difference isn’t it, they’ve seen me and they’ve gone back in and they’ve put them back in the correct clinical waste, then they’ve washed their hands, but if I hadn’t been there, they would have come out” (IPCb4)

5.8.5 Summary of CMO 1

The different approaches to enacting the infection control intermediary programmes between cases (i.e. embedded clinical champion role in case one, versus a more distributed appointment approach in case two), meant that levels of presence were

different by virtue of the nature of the programmes. Data showed how the consequences of both overt and covert visibility drew attention to individuals' own practice, and promoted better adherence to infection control through fear of being caught out, and also wanting to be seen to play the right part. In case one, the close proximity of intermediaries to clinical staff was facilitated because of the nature of their clinically embedded roles. In both cases, intermediary presence was important for increasing attention to individuals' own practice, because they did not know when they were being watched, but the data also showed the risk of clinical staff becoming acclimatised to their presence. In case two, where the more episodic nature of intermediary presence sometimes led to less opportunity to enact visibility, other ways were sought to compromise for this, for example, communication technology.

5.8.6 Final CMO 1

Context: Where programmes bring intermediaries in close proximity with clinical staff and there are high levels of clinical presence, this enables the intermediary to watch practice as it happens through overt and covert visibility, and there is an enhanced sense of being watched on the part of clinical staff

Mechanism: clinical staff fear being caught out, or not being seen to play the right part in infection control practice.

Outcome: promotion of self-monitoring, and better adherence with best practice in infection control

The success of the CMO is hindered where there is less opportunity for intermediaries to be present or visible, or where intermediary presence is less obvious and consistent. The CMO could also be hindered if clinical staff become complacent if they are too acclimatised to intermediary presence

5.9 CMO 2

Conjectured CMO:

Context: Intermediaries operate in clinical areas with individual approaches and style to build relationships, and use of authority where required where there is non-compliance with infection control practice

Mechanism: clinical staff believe they are being individually supported

Outcome: clinical staff comply and are motivated to act according to policy and standards and there is an atmosphere of collegiality in clinical areas.

5.9.1 Intermediaries' individual approaches and styles (case one)

In case one, data showed that champion intermediaries described the importance of their specific approaches and style:

“ you need to be able to talk to people. But you need to be able to talk to them on a level that...that's not patronising” (CCa3)

“ because I think you try to have a mixture of professionalism but also...understanding, really, and almost friendship, but obviously you've got to maintain that professional relationship” (CCa4)

The intermediaries were keen to help clinical staff to find immediate solutions to problems in ways which did not increase their workloads, and generally support them to manage day to day issues. Data reflected the efforts on the part of the champion intermediaries to develop relationships with clinical staff:

“you've got to build a relationship. It's no good going into the areas and being aggressive, being nasty, because you only then build up this wall. You've got to go in and have a rapport with the staff. And by having a rapport with the staff, if your communication skills are good and you explain why they should be doing this or why they shouldn't be doing that, and you give them good communication, and good, you know, feedback...yeah, sometimes you have to tell them, “No, you're doing it wrong” but...“This is why you're doing it wrong. This states that...”Usually the staff are great about it” (CCa1)

“It's like when we just went down to that department and asked that doctor would he remove his watch. Now the staff know that any member of staff, if it's in their unit they can say “Excuse me but can you take...because if infection control come down...”, but I think it's this old thing about doctor and the nurse being the doctor's handmaiden, and I

think a lot of them are afraid to...move things on and we'll say "We're on a ...each role is different and we all bring our skills in...Doctor, do you mind taking your watch off?" and it's how you approach people again" (CCa1)

5.9.2 Authority (case one)

One function of the intermediary roles in case one, as outlined in their job description, was to *"challenge poor practice amongst all healthcare workers and implement changes in procedures to improve compliance"* (Appendix 5.1 Da6). In case one, champion intermediaries explained how they initially had to break down barriers so that the infection control issues that required attention were addressed:

" when we first got the jobs, we were going round, and I think they thought of us as a bit of threat, that we were going to go on there and that we were going to say 'you're doing this wrong, you're doing that wrong, you should be doing it this way' but it's for us to go and teach them how to do it the proper way, and go on there and speak to them about it and what problems they're getting with it" (CCa2)

In some instances, intermediaries resorted to using power invested in them in their specific role to ensure that infection control practices were complied with:

" See power's a funny word really. I think people see you anyway as having a certain amount of it, just in the job you do, I've never been particularly power crazy, if I'm honest, I've ...sometimes you have to 'pull rank', only because if you're finding that you are hitting obstacles or people are being particularly ...obstructive, I think sometimes you have to have a little bit of power perhaps" (CCa4)

5.9.3 Support (case one)

Intermediary contact was often undertaken in a supportive manner, with intermediaries describing how they cushioned clinical staff where required. Participants expressed how they attempted to protect clinical staff by absorbing some of the infection control issues during their clinical presence periods:

“we sort of cushion them by going out, seeing what’s happening out there, are we nursing our infected patients in the right way, are they in barrier rooms, are the staff wearing PPE, why has that patient got that infection, we’re finding out”. (CCa1)

Clinical staff were encouraged to contact the intermediaries if required, and they expressed their belief that there was an avenue of personal support available to them:

“I find that they’re my ...they’re my support network and then they’ll come and spend time with me and explain anything to me” (B5a1)

“ if I’ve got any worries or anything I’ve always got in touch with (name of champion) like, you know...I’ve got her page number to page her if I’ve got a problem. If any...I’ve got any problems she’s been really good, she’s always there for me, you know, she’s helped me through a lot of things at first like, she was really good” (CSWa1)

There was evidence that the intermediaries made concerted efforts to provide support in clinical areas, because of the relationships they had developed with the clinical staff. Consequently, for clinical staff, this resulted in the belief that there was availability of personal support for infection control problems:

“it’s not the same as an e-mail and then you have to wait a week, or until you’re next back on shift or...and then that’s the whole time then...it could be your next audit due then and nothing’s changed and nothing’s gone further, but to be visibly present there and when...obviously when the champion comes on the ward and people are aware of who they are, even though I’m a link nurse and I’m one of them on the ward, it’s not the same, they see me as a colleague that they work with and no separate role to that, unless they want to know something. Whereas being a...just a champion for that, which is not a...stationed on a certain ward, so that it is her general role and passion, it’s more of a sense of when she’s on the ward she’s either auditing or coming to review us in regards to an infection control issue.” (B5a1)

5.9.4 Collegiality (case one)

Because there were enhanced opportunities for collaboration between the champion intermediaries and the clinical staff, this contributed to development of collegiality in clinical areas as noted by this manager participant:

"We are very lucky in this Trust because we do have the champion role. We've got our own CNS attached to the surgical unit, our own infection control CNS attached to surgery. And she comes to my lead nurse meetings, they are monthly but she's not always able to get to all of them. We have very strong links between us, and manage the day to day stuff through the champions" (Ma1)

Friendly approaches were observed during interactions between individuals, and included the use of banter:

"I'll give you an example, I went onto an area very recently, about two weeks ago, a very, very pleasant doctor, he was having a joke, it was fine, you know, we all had a banter, and I obviously came and he didn't know, I've never met him before, he was a consultant, a very pleasant gentleman, and he said "Ah, infection control. Look, I've got my watch in my pocket" (CCa1)

Where there were examples in the data of champion intermediaries and clinical staff working together to find new ways of working that would focus everybody's attention on the importance of infection prevention and control, this contributed to developing collegiality in the clinical areas:

"I mean, since we've merged, the ward as a whole really struggled, it struggled with morale, it struggled with staffing, and then obviously she's very mindful that the figures on the ward, our Saving Lives figures, were not as they should be. And it was a way that we had to think quite carefully between us how we could improve the ward as a whole but not diminish morale any further, and she did it...we tried traffic lights, triggers...we did individual trackers for that station. So some days it can be the same nurse in three days on a row, whereas if I audit on that day

and they've done it three...they've been on there three days in a row and they haven't done their VIP scores, or they haven't documented the catheter care, or they haven't done any of the things I'm auditing, you can identify then that it's not the whole...staff as a whole, that it can be small individuals that just need better education" (B5a1)

5.9.5 Intermediaries' individual approaches and styles (Case two)

In case two, it was noted that the different intermediaries in distributed roles were also intent on finding ways to support clinical staff and promote an atmosphere of collegiality in clinical areas. For intermediaries, working together with clinical staff, promoting effective team working and good communication between them, were important factors to building relationships and ensure the provision of support. There was evidence of sharing ideas and responsibilities in infection control in a friendly way between different intermediaries and the people they worked with:

"like yesterday, I was on one of the wards, and somebody come up to me and ask me for advice on a patients had loose stools in the bay so I helped them reassess all the cubicle areas so that we could bring one lady out and one lady in, do you know what I mean, so we work, our role basically is to work with them, you know, help them and advise them and support them basically" (IPCb4)

A constructive approach to intervening where required enabled different intermediaries to develop positive relationships with clinical staff. The ways in which intermediaries used specific personal approaches and styles was important to build a sense of collegiality:

"I think once they've seen your face a few times and that they realise that you're not there to beat them with a big stick, you're there to help, and offer advice and support them and the patient I think they begin to sort of, I think it's almost like melting, isn't it, and warming to what you've got to do" (IPCb3)

“I think it’s just the way, probably the way you approach people, you know, if you have to say anything to anybody, I’d rather just take them to one side and say it quietly and not make a fuss out of it” (IPCb3)

As in case one, data reflected how the provision of support for clinical staff was a priority for different intermediaries, especially where the intensity of clinical practice was acknowledged:

“ and they get an awful lot of criticism cos it’s such a busy ward so we have a lot of complaints coming in and things like that so they need to know that you’re there to support them as well” (Mb1)

For infection control issues, there was a sense of feeling supported on the part of clinical staff:

“ in this ward, I mean, just the support in general from everyone, everyone gets on so well on (names ward), that’s one of the reasons I picked to go there...there’s not one person on there you couldn’t turn to and say can you help me with this?” (B5b1)

What hindered the success of this CMO was described as individuals’ reluctance to change their practice, a challenge for different intermediaries, who found that routinized ways of working were sometimes preferred by individuals. In case one, participants explained what hindered the intermediary role:

“changing people. Because some people have been in the job for so long that they get into a routine, what they do every day, it’s trying to change their practice... because like I say, they get into that...they...it is hard to change somebody when they get into a routine of doing things. But I think you can change them, but they’ve got to change with the times haven’t they? Because it’s wrong practice if they don’t, isn’t it?” (CCa2)

“and inherently our problem was that our staff’s knowledge of what they were supposed to do was inadequate. And so, everything we’ve done from then on has been about getting that right...you’ve got to build infection control practices into the model of care that’s happening, and you can only do that by ensuring that everything is reinforced” (Ma1)

The success of the CMO was also hindered if intermediaries were challenged themselves by negative attitudes:

“I don't say it makes our job easier...I mean, we're there to try say to them...we're not there to be mean and horrible...and it doesn't make it easier, because you still will get the odd one saying 'Well, where's your evidence? Find me research that says having my sleeves up above my elbows is going to do anything, but if it's common sense, if you're wearing lots of jewellery and watches, you're not going to wash your hands effectively, and that's all we're trying to say” (CCa3)

5.9.6 Summary of CMO 2

In case one, how the champion intermediaries made efforts to build relationships triggered the sense of being individually supported for individuals. In case two, the CMO was built and refined as the findings pointed to how collegiate approaches in clinical areas was triggered through the sense of availability of personal support, through efforts to build relationships being enacted by a more distributed intermediary programme for infection prevention and control.

5.9.7 Final CMO 2

Context: Intermediaries operate in clinical areas with individual approaches and style, including the use of authority where required where there is non-compliance with infection control practice

Mechanism: staff believe they are being individually supported through the pressures of clinical practice

Outcome: clinical staff comply and are motivated to act according to policy and standards and there is an atmosphere of collegiality in clinical areas.

This CMO is hindered where individuals are reluctant to change their behaviours and have negative attitudes

5.10 CMO 3

Context: Infection control practices are known and seen as high organisational priority and intermediaries provide feedback in a sensitive way which is both positive and reinforcing

Mechanism: staff are prompted to reflect on their own practice

Outcome: Staff are motivated to practice correctly

5.10.1 Organisational priority (case one)

In case one, the organisational infection prevention and control strategy and targets for reducing the rates of infections reflected the national policy of zero tolerance for HCAs (WAG, 2004: APIC, 2008: WG, 2011b). Documentary data showed that the Trust's vision and priorities included a commitment to reducing the risk of HCAs for the patients in its care, with clear lines of accountability through the appointment of the director of infection prevention and control (Appendix 5.1: Da3). The significance of the language used within policy and strategy by the organisation was evident by how participants used the same language to explain its relevance to practice:

" well we've got our policies within the Trust: we've got the bare below the elbows...which I think actually is complied with a lot...a lot better than it used to be, as we were saying about the medical staff. I think it's becoming a little bit more...drummed into them sort of thing, from their... probably from their background at University and stuff, that it's an important part of it, and at the end of the day it is part of hospital policy"(CCa3)

In other data, there were reports of walkabouts to increase the visibility of board directors, collaboration with patient groups, governors and members of the Foundation Trust and the strategy including mandatory training programmes for new and existing clinical staff (Appendix 5.1: Da7: Da12: Da21). The Trust's commitment to infection prevention and control had also included investment in the conception and development of the champion intermediary programme. The Trust strategy incorporated performance management, policy and audit. The programme

champions were responsible for conducting audits, as articulated in the job descriptions (Appendix 5.1: Da6): “ *to participate in undertaking quality assurance infection control audits through a structured programme and communicate results to the relevant staff and correct poor practices*”. In interview data, the enactment of policy and strategy was perceived to be a key aspect of the champion intermediary role:

“And it’s about really going out there and being a part of their team as well. We’re doing audits, like I say, we’ve been doing audits, we do spot checks, we go round on the environmental audits when the domestic supervisors go, and the Trust go round as well, we’ll be part of that so we can see what’s actually going on with the cleaning part. I mean you have people who come and approach you and don’t want to say anything to the ward so...we try and deal with that part of the job as well” (CCa2)

5.10.2 Feedback (case one)

In case one, organisational policy and performance management for infection control, reflected in the organisational strategy, showed how infection control intermediaries were expected to lead on the provision of feedback on performance for clinical staff. In case one, champion intermediary post-holders’ job descriptions suggested that they were responsible to: “*collect and analyse data and feedback results of agreed audits to members of the multidisciplinary team in a timely manner in order for appropriate action to be taken to reduce the spread of infection*” (Appendix 5.1: Da6), which highlighted the subsequent specific ways in which feedback was provided by the intermediary post-holders. There was little information in the job descriptions about exactly how intermediaries should provide feedback, but the role-holders themselves reflected how the approach they chose was often in response to the situation, and undertaken with the aim of increasing individuals’ positive and habitual infection control behaviours. The intermediaries expressed how important it was to get this right:

“because we obviously know nurses are already pushed, but at the same time patient care is, you know, the most important thing and that’s what we’ve got to focus on. So if we see something that needs addressing,

obviously we will say it needs addressing, but we try and find solutions where the workload isn't going to be increased by addressing that issue. And it's about working together to find solutions, and putting in these training packages I mentioned to make sure that the staff are aware of what they've got to be doing so that we can start putting these things in place knowing full well that the staff are aware of what's going to be achieved " (CCa4)

Data showed how the champion intermediaries used a range of approaches to provide feedback for infection control issues. In an example from case one data, the wearing of wristwatches was often cited as an example of non-compliance with organisational standards and guidelines. "Bare below the elbows" was a strategy that formed part of the high priority afforded to infection control by the organisation, as noted in documentation collected during the case study (Appendix 5.1: Aseptic Technique Policy Da4). The champion intermediaries cited examples where there was non-adherence with the practice. In this data extract, CCa2 reported the sensitive way in which she reminded individuals to reinforce the organisation's policy:

"if they forget to take to their watch off they'll say 'Ever so sorry, I forgot to take it off', and they'll take it straight off and there's not a problem" (CCa2)

*One member of staff that we talk to on Ward * is the cleanliness support worker, a fairly new role which has been established by the organisation to provide support for clinical staff in different units, in terms of environmental cleanliness, and generally to keep the ward tidy and clean, with role holders being responsible to the ward manager, as opposed to domestic services. The support worker obviously knows CCa4 well, and they greet each other informally. CCa4 discusses ward equipment issues with her in the treatment room, and gives feedback in a sensitive way, listening and taking time to talk to her. (Field notes 19/1/11)*

Data showed how participants explained how the nature of giving feedback was often dependant on the topic and purpose and they referred to how they used specific ways in order to get individuals to reflect on their practice, including reinforcing and using sensitivity:

“if somebody’s got to be told they’ve got to be told and...it’s got to be done hasn’t it?” (CCa2)

“and I think by ‘sensitive’ I just mean you need to obviously say it in a way that it needs to be done, but not scream and shout at people, you just need to have that understanding and sensitivity when you’re dealing with issues that obviously...especially if you’ve got a ward where you know morale is particularly low” (CCa4)

Intermediary participants showed how they were cognisant of the constant demands on staff within the reality of healthcare practice, and this influenced the ways in which they provided performance feedback, which was often tailored sensitively:

“because the staff out there find it hard, because they’ve got a lot to contend with, paperwork and everything, and I think you do need to sit and listen to their point of view sometimes” (CCa2)

“I think sometimes if you go in and start ranting and raving about issues they’re either going to burst into tears or you’re going to get a barrier put up and you’re not going to get the most positive effect you could out of what you want to achieve” (CCa4)

Performance feedback was reinforced to promote a greater sense of the organisation’s priorities to infection control, and motivate individuals to reflect and practice correctly:

“and you have to be able to say to them...you know, there’s ways of doing it, but you have to have the courage to go and say ‘actually, you shouldn’t be wearing that regardless of grade, because a policy is a policy regardless of what grade you are in the hospital” (CCa4)

“ and that’s a driver because the staff actually take quite...I mean the lead nurses will come and knock on my door, “We’re in the green”, and I’m like, “Yeah, oh brilliant”, so there is a sense of pride in achieving, you know, good audit results” (Ma1)

5.10.3 Organisational priority (Case two)

In case two, the management of performance was part of the organisation's infection control strategy: *"the aim of reducing/minimising HCAs will be embedded within overall management schemes and will have links to clinical governance, risk management, and financial and performance management"* (Appendix 5.2: Db1), and HCAI targets again reflected the national zero tolerance policy. The objectives within the infection control strategy were formulated on the principle of zero tolerance for avoidable HCAs (Appendix 5.2: Db1). There was evidence that some clinical areas had developed their own ways of meeting the strategic targets, and ways in which they enacted provision of feedback to clinical staff. For example, wards had introduced daily safety briefs, providing staff with regular contact time with each other and structured face to face opportunities to address any practice concerns, which could include infection control problems:

"we have safety briefs, we have twice a day, which is where you sort of collect staff to go over safety issues on the ward" (B7b1)

The organisation had launched its latest Nursing and Midwifery Strategy in September 2011 (Appendix 5.2: Db15), with the aim to adopt eight high impact changes initiatives, one being protection from infection for patients. The Nursing and Midwifery Strategy also indicated the aim to roll out certain care metrics including hand hygiene. There was evidence of monitoring of compliance with hand hygiene in clinical areas, reported by participants and in documentary data, illustrating how hand hygiene audits were structured, based on University Hospitals Lewisham Observation sheet. The audit tool (Appendix 5.2: Db16) set out three areas of risk –low, medium and high and targeted different clinical staff groups (nurses, students, doctors, healthcare assistants and others). Whilst participants generally agreed that audits were helpful to focus attention on best practice and maintain standards, some were concerned with the challenges of achieving targets when faced with the reality of practice:

"and be realistic, I mean, I know every audit want a 100%, but I think you've got to realistically approach situations and say, well, this is what we're trying to achieve, but realistically I'm happy with what we've done"

at the minute, you know, achievable targets really, you know, not targets that are not achievable at that time” (B7b1)

5.10.4 Use of language (case two)

In case two, the success of the CMO was supported by ways in which language was used. Different intermediary participants discussed infection control issues using the terminology and language perpetuated in policy and strategy, for example, the concept of *zero tolerance* as presented in the organisation’s infection control strategy (Appendix 5.2: Db1). Participants spoke of the importance of enacting the organisation’s policy and strategy in clinical areas, support the policy of zero tolerance (Appendix 5.2: Db1). Provision of feedback to motivate staff to practice correctly was considered essential. In this data extract, an intermediary used audit results to commend staff positively on their performance:

“we’re always very keen and we discuss it here in terms of communication, when things have, you know, you’re really impressed with something and things have gone well that you say to that person, you know, cos that’s crucial really isn’t it for continuing ... good practice and hopefully they’ll pass it on to someone else then” (CNSb1)

Where investment in staff and lack of time to practice according to the organisation’s policy and strategy were identified, embracing the organisational policy and meeting targets was affected:

“if there was more investment in staffing areas appropriately there might be more embracement of targets and the importance of achieving them – your biggest resource is your staff, if you don’t invest in your staff, the peripheral areas of patient care will be detrimentally affected” (B7b1)

“and that’s why infections spread on the other wards because they haven’t got the time, they aren’t not handwashing properly or forgetting to handrub in between patients and that’s how you get your cross infection” (B6b1)

In case two, although face to face feedback appeared to be one strategy employed by different intermediaries, emails were also reported to be sent to provide feedback at

the end of infection outbreaks. Audit results were relayed back to clinical areas in the form of communication boards and books. Some participants were concerned that giving feedback in response to poor audit results could be interpreted as punitive by individual staff members, and if this was compounded by regular negative feedback could lead to general feeling of complacency amongst clinical staff. One participant provided this example of the negative consequences of feedback if the emphasis was placed on poor results:

“I think traditionally, audits, or results of audits when they don’t mean what’s expected, there’s always quite a punitive response, we’re not doing, improve or you’ve let us down so there’s been a lot of negative connotations with audits and people do switch off, ‘Oh well, we’ve not done well again, so what’, you know, instead of praising people and saying this is what we need to do to improve and well done’ (B7b1)

Data showed that intermediaries agreed that feedback should reflect the positive aspects of practice, for example, to include the use of praise. The impact of this approach on the part of individuals was to promote a sense that change for the better was feasible:

“ oh yeah, that is good, yeah, and I know that the Sisters are pleased, you know, with the results, cos they’ll say to me, oh you know we had a really good result last month, you know, 99% on the cleaning and on the nursing issues, so yeah, it is good cos it makes you feel proud of the ward and that really” (Hb2)

“and good practice as well, we always take good practice back as well you know, we always report on the C diff numbers, what is good, what’s happening, you know, if we’ve seen good practice” (IPCb4)

Where poor performance required feedback to be given to individuals, this was reinforced in a challenging way to promote the organisation’s priority to infection control practice, to evoke guilt or shame on the part of clinical staff, so that individuals were motivated to practice correctly and promote good habits in infection control:

“I think (feedback for staff) it’s quite motivating” (B6b1)

“and also when we are challenging non-compliances, you know, the staff know that it’s to be done in a non-confrontational manner, so you know, they must take the person away from the clinical setting, and say, excuse me, can I have a word with you privately?” (CNSb2)

“Oh yeah, definitely, I mean, I’ve addressed people individually and, you know, I get comments like ‘well, that’s not important in the grand scheme of things ,you know, it was more important that I stabilised that patient or gave medication or, you know, ‘why are you going on about that when I was doing this?’ you know, ‘you see the bigger picture in my bay, it was busy, or they were ill’ so you do need to sort of sometimes ground people and say well this is the fundamental part of your job, and you will put people at risk, and sometimes use quite emotive words, and say, you could kill your patient if you do not wash your hands, you know if you’re not clean, you could kill your patient, because sometimes, if you do have to make people stop and listen by being emotive, and then they sort of listen then and take it on board’ (B7b1)

5.10.5 Promoting good habitual behaviours (case two)

In case two, there was acknowledgment that clinical staff needed reminding of infection control in clinical situations:

“ it’s like even with resuscitation you should always wear gloves for protection of yourself, and they’ll forget, they’ll start cracking on with things, and got to say to them to remind each other, that’s not to be nasty, just remind each other, we can all be forgetful, we’re only human” (B5b2)

Data showed how different intermediaries strove to promote ‘good’ habitual behaviours amongst clinical staff, through constant reinforcement:

“ I can’t stand there and make sure every single person washes their hands and do the other job as well, so you’ve got to believe that, they

know what they're doing and that they're going to do the right thing as well" (B5b1)

" keeping on top of making sure that everyone's washing their hands, or, you know, if someone's visiting a patient who's in barrier room, don't let them go in with no gown or gloves on, you know, just keeping on top of that really, but then that's the hardest part to do" (B5b1)

This data extract shows how intermediaries promoted good habitual behaviours amongst clinical staff:

"making it habitual, because, that is another thing I'm always saying, you know, if everyone got into this habit" (IPCb1)

5.10.6 Summary of CMO 3

In case two, the CMO was built upon to show how the enactment of policy and strategy and how feedback was provided was instrumental to increasing positive habitual infection related behaviours. In essence, this CMO illustrated the relationship between how the enactment of organisational policy and strategy and how performance feedback was tailored by different intermediaries promoted a heightened awareness of the organisation's priority and that change is feasible on the part of individual staff. In case one, the ways in which feedback was tailored by different intermediaries was triggered by the empowerment enacted through their specific role. This relationship was also noted in case two, whereby the language and enactment of policy and strategy was used by different intermediaries to raise awareness amongst clinical staff of their personal and professional responsibilities. In turn, there was greater commitment being promoted to increase positive habitual behaviours across the case sites.

5.10.7 Final CMO 3

Context: Infection control practices are known and seen as high organisational priority and intermediaries provide feedback in a sensitive way which is both positive and reinforcing

Mechanism: staff are stimulated through guilt or shame to recall what they should be doing, and reflect on their own practice

Outcome: Staff are motivated to practice correctly and good habitual behaviours are promoted in infection control

The CMO is hindered where investment in staff and lack of time to enact the organisation's policy and strategy are identified. The CMO could also be hindered if negative feedback leads to complacency

5.11 CMO 4

Conjectured CMO:

Context: Intermediaries provide practice based education for clinical staff and learning is made more real for clinical staff.

Mechanism: staff are consistently reminded of the sense of relevance to their own infection control practice

Outcome: Heightened awareness of infection control practices in clinical areas

5.11.1 Practice based education for staff (case one)

In case one, the champions were responsible for formal training and education in the form of mandatory educational sessions for new and existing Trust staff. In the role job description (Appendix 5.1: Da6), role-holders were expected to “*assist in the development and deliver education and training programmes, designed by the ICT, on the control of infection for all staff, e.g. hand hygiene updates. To teach the multidisciplinary team in informal/ formal settings e.g. classroom and in the clinical area*”. The concept of practice or ward based education was shown to be preferred by managers:

“She can show somebody a hundred times how to do and MRSA swab in the lab with a dummy, but if you...want to show them on a real life patient, it's so much easier if you're there working with that nurse”
(Ma1)

In interview data, the practice-based ways in which the intermediaries provided training and education for clinical staff were made evident. These included tailoring packages to suit the specific needs of clinical staff, in relation to infection control issues:

“We do educational packages, on the job and...we do...instead of doing big ‘come and sit down’ packages, as in sort of a proper...educational session, we do little snapshots on the areas. So we do teaching packages there. We try and teach things like aseptic technique” (CCa4)

Participants expressed that lack of time to attend formal training sometimes hindered the development and knowledge base of clinical staff, and explained that alternative approaches had to be employed:

“And the trick is trying to ensure that what we make as mandatory training is absolutely vital to the provision of care, but doesn’t pull people out for long periods of time because it’s very onerous, trying to get people through training and pulling them away from the clinical areas when those areas are really busy” (Ma2)

Whilst formal teaching sessions formed part of the Trust’s infection control strategy through staff induction and mandatory programmes (Appendix 5.1: Da5), practice-based sessions were much more focused on the specific clinical setting that the champions frequented, so that intermediaries reasoned they were more relevant to the clinical staff:

“and then you’ll find that sometimes the link nurse might come on the phone and say ‘Can you do us a teaching session on TB’, so straight away, because that nurse has asked us about TB...” (CCa1)

“it’s not always a formal based thing because somebody could ask you a question and you could quite happily go off on a tangent from what you’ve gone on there to do, and go and...end up doing something totally different that you hadn’t planned” (CCa3)

Data found that incorporating infection control teaching based in the practice setting enabled the champions to meet the educational needs of staff in ways which were

relevant and timely for their own clinical area based around specific infection control issues. The ways in which champion intermediaries were adaptable and used their knowledge of infection control issues enabled them to change their teaching strategies to suit clinical staff needs in a swift manner:

“you’re thinking, “hang on, shall we do some PowerPoint?”, and perhaps, again. It’s hard to sort of gather staff up in the areas, but again, if there’s a couple at the nursing station and you’ve got ten minutes to spare you can go through it” (CCa1)

What hindered this condition was the recognition, on the part of the champion intermediaries, of the challenges of providing infection control education within busy and often chaotic clinical areas:

“but obviously when you’re short –staffed, when capacity is bad, when they’re rushed off their feet, you do get blips and then you have to perhaps rein them in a little bit”(CCa4)

5.11.2 Heightened awareness of infection control (case one)

The practice-based education approach was perceived to be much more effective to promote a greater sense of relevance to individuals’ own practice and to make staff more aware of infection control practice:

“But then we also rely on the infection control champions in just reinforcing that message all the time. I think I would have to say quite honestly that if we relied purely on mandatory training as a way of getting the information to people it would be relatively ineffective, because it’s that constant drip, drip approach that just has a far better outcome than...you know, people going to mandatory training once every three years that, you know, they never remember it, whereas if its part and parcel, and its built into the everyday clinical stuff, that it becomes, you change the culture” (MRa2)

5.11.3 Practice-based education (Case two)

The relationship noted between the preferred practice-based approach to teaching, and instilling a sense of relevance to individuals' own practice was also reflected in the data from case two. The organisation had also incorporated infection control education into staff induction programmes and mandatory training for existing staff: *“ all staff will understand the impact of infection and infection prevention and control practices and be empowered to discharge their personal responsibilities to patients, other staff, visitors and themselves”* (Appendix 5.2: Db1). However, the lack of priority given to infection control education was a concern for some participants:

“that's one thing I don't see the Trust doing is valuing the staff and the training, on paper it looks as if they do but in practice it doesn't happen”
(B6b1)

In addition, there was concern about the lack of priority to infection control by individual clinical staff, noted during teaching sessions provided by intermediaries:

“I think when you actually stand up there in the teaching and you say that some, you know, unfortunately, some patients die as a result of the healthcare associated infections, I don't think they realise that, you know, until it happens on their ward or perhaps as a complaint” (IPCb3)

Whilst the organisation provided mandatory infection control training, as had been noted in case one, the sessions were not always well attended, and some participants reported that clinical staff were not always given the time out they required for learning:

“I'd like to see the staff attend the sessions more, so maybe it's not about us and what we need but what the clinical setting needs in the ability to let those nurses, or doctors or physios have time out to learn because I think that's what the real problem is” (CNSb1)

For intermediaries, this was of concern, especially where it highlighted clinical staff's levels of knowledge around specific infection control issues:

“because, unfortunately, because of say, lack of attendance to training, some of the trained staff, they don’t know what the current advice is, say with regard to cleaning”(CNSb1)

In case two, intermediaries agreed that teaching the basic principles of infection control should be prioritised to ensure that clinical staff possessed the correct level of knowledge for practice, for example understanding simple interventions, such as stool charts to monitor loose stools. Intermediaries agreed how the fundamentals of infection control practice should be prioritised in the education and training of all clinical staff:

“I think it’s all about revisiting the basics and making people aware that you need to get things right at a foundation level before you know, you can move on to bigger and better things in practice really” (B7b1)

In case two, clinical staff participants reported that learning about infection control issues was sometimes organised within wards, in a reciprocal manner, for example, teaching the principles of isolation. However, they were also aware that the success of reciprocal teaching was highly contingent on the levels of knowledge that staff possessed in order to impart correctly to others:

“they’ll only learn through watching other people so as long as your ward staff are doing it the correct way” (Mb1)

Data showed how intermediaries were responsible for assessing individuals’ learning needs and provide practice-based teaching:

“when we go to a lot of the wards, the housekeeper come to us with all sorts of questions and I guess some of that is because they’re new in post and they’re eager for knowledge and they want to check things out” (CNSb1)

Intermediaries preferred a practice-based teaching model, which they described as ‘micro-mobiles’, to make the most of the time available for short teaching sessions on the ward, and this was agreed to be an effective strategy which they believed contributed to making learning a more meaningful experience for clinical staff and reminded clinical staff and made infection control relevant to their own practice:

“when you’re actually in that environment with that patient, seeing what’s going on, and you’ve got everything in front of you to work with, it makes it more real, it makes it happen” (B6b1)

The micro-mobile sessions provided by the infection control nurses were also embraced by clinical staff:

“we do have like micro-mobile sessions where they will come up and they will do like hasn washing technique for staff” (B6b1)

5.11.4 Heightened awareness of infection control (case two)

For the intermediaries, what worked was practice-based teaching and reminding clinical staff of the relevance to their own practice:

“I think on the ward training is, you can bring it into the reality for them can’t you?” (IPCb4)

In turn, the specific practice based approaches promoted change by clinical staff and contributed to making them more aware of infection control:

“for example, like the stool charts, yes it is important, and it’s making sure that people do know the importance and understand why they’re doing it, cos if they understand why they’re doing it, they will be more inclined to do it” (B6b1)

“I think another issue is education but I think by having these champions they’ve raised it amongst their peers the importance of doing things” (B7b1)

5.11.5 Summary of CMO 4

In case one, data showed how the champion intermediaries were involved in providing teaching in the practice setting. Where teaching was made relevant to the local context, this led to more meaningful learning for clinical staff. In case two, there was evidence of reciprocal learning in clinical areas, but there were views expressed about how education and training should be best facilitated to meet the learning needs of clinical staff. However, most noticeably across the two cases,

practice based education enabled different intermediaries to offer models of teaching that were timely and relevant for clinical staff which were recognised as important by participants, and contributed to more meaningful learning. Through employing practice-based teaching, provided in a timely fashion, this promoted an enhanced sense of relevance for individuals. Whilst mandatory infection control education and training for clinical staff were part of the organisations' specific infection control strategies, it emerged that adapting flexible strategies/approaches were preferred by the intermediaries and clinical staff, and were considered to be more effective by making staff more aware of infection control and promote change.

5.11.6 Final CMO 4

Context: Intermediaries provide practice based education for clinical staff, incorporating fundamental elements, to counteract lack of priority or time for formal training, and learning is made more real and meaningful for clinical staff.

Mechanism: staff are consistently reminded of the sense of relevance to their own infection control practice

Outcome: Heightened awareness of infection control practice

This CMO is hindered by the challenges of providing infection control education within busy and often chaotic clinical areas or if there is lack of priority given to infection control education, or where, in the absence of intermediaries, there is reliance on reciprocal learning by clinical staff which may not always be reliable

5.12 Summary of the CMOs

Pawson and Tilley (1997: 127) believe that; “the hallmark of realistic evaluation work is that it is informed, and this continuity of intelligence gathering is the key to cumulation”. In this way, case one provided the emergence of a range of different CMOs which showed the contexts and mechanisms of how the champion programme contributed to outcomes to promote best practice. Case two sought to understand the regularity of the CMOs from case one, through the study of a distributed intermediary approach in a different setting, and data from case two enabled the CMOs to be built upon and refined. In this study, the focus on the

champion programme in case one, and the more distributed approach to different intermediaries in case two, have enabled the in-depth analysis of the CMOs to show the demi-regularities to explain what works. In other words, the findings provide a degree of clarity about the potential of infection control intermediaries to promote best practice.

Over the two cases, four main CMOs were identified, although these are not mutually exclusive. High levels of physical presence of intermediaries and close proximity to staff in clinical areas enabled the enactment of both overt and covert visibility and enhanced the sense of being watched on the part of clinical staff, who feared being caught out or not being seen to play the right part in infection control practice. The outcome of this CMO was the promotion of self-monitoring because staff did not know if they were being watched, and better adherence with best practice in infection control. The success of the CMO was hindered where there were less opportunity for intermediaries to be present or visible, or where intermediary presence was less obvious and consistent. The CMO highlighted the danger of individuals becoming acclimatised to the intermediaries' presence.

Intermediaries operated in clinical areas with individual approaches and style, including the use of authority where required where there was non-compliance with infection control practice. Clinical staff believed they were being individually supported and were motivated to act according to policy and standards. There was an atmosphere of collegiality in clinical areas. This CMO was hindered where individuals are reluctant to change their behaviours. Infection control practices were known and seen as high organisational priority and intermediaries provided feedback in a sensitive way which was both positive and reinforcing, so that staff were stimulated through guilt or shame to recall what they should be doing, and to reflect on their own practice. The outcome of this was that staff were motivated to practice in the right way and good habitual behaviours were promoted in infection control. The CMO was hindered where investment in staff and lack of time to enact the organisation's policy and strategy were identified.

Intermediaries provided practice based education for clinical staff, incorporating fundamental elements, to counteract lack of priority or time for formal training, and learning was made more real for individuals. Through this, staff were consistently

reminded of the sense of relevance to their own infection control practice. In turn, awareness of infection control was heightened.

5.13 Revisiting the findings in relation to the initial programme theory

In the review, the initial programme theory found that intermediaries have the potential to promote and influence best practice in infection control through the provision of education, provision of feedback on data, implementing and monitoring guideline use. The findings of the study provide evidence to show that, where intermediaries provide education, practice based approaches contribute to more meaningful learning and promote an enhanced sense of relevance of infection control practice for staff. The findings have provided much more detail about the potential impact of intermediaries' role in performance feedback, pointing to the approaches they use as being impactful, motivating staff to practice correctly and promoting good habitual behaviours in infection control. Successful implementation and monitoring of guideline use is contingent on the degree in which intermediaries can be present and visible in clinical areas. The findings highlight that the scope of intermediary influence is dependent on their individual approaches and styles and support the initial theory in acknowledging their significance in building relationships. Where the initial programme theory alluded to the influence of broader contextual factors that influence the role and function of intermediaries, the findings have highlighted the importance of organisational priority for infection control, support for resources, including intermediary programmes, leadership for infection control at the clinical level, and the impact of language in enacting policy and strategy.

5.14 Affirming the “sense-making” of the demi-regularities

As previously emphasised in this thesis, realist evaluation studies should place considerable emphasis on stakeholder engagement. For the review, stakeholder groups were convened to establish the views of individuals with a vested interest in promoting best practice in infection control. Consistent with the integral stakeholder involvement in the review, it was important to incorporate stakeholder engagement to consider the study's findings in order to corroborate the demi-regularities, and to

establish the meaning of the findings for individuals. Two meetings were convened with groups of infection control nurses from two infection control teams based in one University Health Board. The meetings were facilitated by the researcher, and a power point presentation was developed to provide the backdrop to the study and outline the main findings (Appendix 6.1). The meetings were held in December 2012 in the stakeholders' workplace, at times suitable for them (Table 5.8).

Stakeholder meeting 20/12/12 12.30pm	Stakeholder meeting 18/12/12 11.30am
Clinical Nurse Specialist Infection prevention and control (1) Infection control nurses Band 6 (3)	Clinical Nurse Specialist Infection prevention and control (1) Infection control nurses Band 6 (2)

Table 5.8: Overview of stakeholder meetings

The main study findings were presented to those present, and the stakeholders' were given opportunities to clarify points, and ask questions. The meetings then took the form of a discussion forum, whereby each demi-regularity was explained in detail and the stakeholders were able to present their own views. In general, the stakeholders expressed that the findings resonated with the reality of practice, and their own views on how best practice can be promoted. There was agreement that looking at the role of different intermediaries was instrumental to improve ways in which best practice can be promoted. The findings from this study provided a different angle for the stakeholders to consider their own perspectives. From the infection control intermediaries' perspective, the stakeholders agreed that the conditions of presence and proximity were important for them in their own workplace, affirming the significance of this condition, and its potential to transcend different contexts. The being seen (visibility) mechanism resulted in an intense discussion in both meetings, showing how the finding resonated with their own intermediary roles, and highlighting the significance placed on visibility as an essential element of promoting best practice . The meetings were useful to explore the concept of surveillance in a different way than the traditional surveillance of

data, highlighting the need to explore human surveillance in further studies. The stakeholders highlighted the challenges of how to maximise presence and visibility in contemporary healthcare systems in the face of finite resources. The discussion and feedback by the stakeholders to confirm that the ideas were applicable to their practice, affirmed the “sense” of the demi-regularities developed from this study, and were useful to support the planning of the study’s revised programme theories.

5.15 Conclusion

This chapter has presented a report of the findings from the two case studies. The findings have been presented in CMO format sequentially to show the development and refinement of findings over time. Data collected in the first phase of this study (case one), resulted in the emergence of four CMOs which highlighted the potential ways in which a specific infection control intermediary programme has the potential to be successful to promote best practice. In the second phase (case two) sought data from a different site to build upon and refine the initial CMOs. Whilst the organisational characteristics and attributes of the two sites were different, elements within the CMOs resonated over the two cases to demonstrate regularity, and the findings established the existence of patterns showing ways in which intermediaries can promote best practice.

In the footsteps of the realist approach, the next chapter will provide a discussion of the main findings, exploring the themes which have emerged, and consider the theories which underlie the study’s demi-regularities. For Pawson and Tilley (1997:71); “the basic task of social inquiry is to explain interesting, puzzling, socially significant regularities”. In this study, the demi-regularities show what can be learnt about the potential ways in which intermediaries could successfully promote best practice. Chapter six will discuss the findings based on the themes which emerged, and explain how they contribute to new knowledge for future policy and practice.

CHAPTER 6:

Discussion

6.1 Introduction

In this chapter, the findings are discussed and consideration is given to the overall contribution of the thesis to new knowledge. The demi-regularities which emerged across the two cases studies will be discussed. Considering their implications against the wider field of theory will lead to a better understanding of the significance of the findings (Pawson & Tilley, 1997). The findings are discussed in the context of the initial programme theory uncovered in the realist review. Following the trail of the realist approach, it was important to revisit the theories as well as consider other literature in view of the study's findings. Finally in this chapter, the revised programme theories from the findings are presented, in the form of guidance which can be developed and refined to support policy and practice. In the realist approach, the conception of the programme theories is the first step in the development of; "essential conditions which makes sense of one case after another" (Pawson and Tilley, 1997:120) to illuminate the ways in which intermediaries can have impact in promoting best practice. The start of the chapter presents an overview of the demi-regularities.

6.2 The study's demi-regularities

An essential element which separates realist evaluations from other types of outcome-focused evaluations is the focus on understanding how programmes or services, which offer different resources, have different effects for people (Timmins & Miller, 2007). The challenge for the realist evaluator is to identify the "resources and approaches supporting change embodied in a particular programme" (Timmins & Miller, 2007: 10). The overarching aim for this study was to develop CMOs to illuminate how different intermediaries operate to promote best practice in infection control, using the context-mechanism-outcome triad.

6.2.1 Model of context (Greenhalgh et al, 2004)

“Broadly, context includes the surroundings, stimuli and other phenomena that influence program interventions. Context includes setting and location, as well as local, historical, and organizational structures and conditions” (University of Ottawa and Ontario Ministry of Health, 2009). It was important to unpack the key factors which could influence (either positively or negatively) the mechanisms which resulted from intermediary programmes in infection control. The chosen model of context helped to understand the context of the case sites and the determinants which could influence the success or failure of the intermediary programmes. Inner context determinants were unpacked to consider the structure of the organisation, the absorptive capacity for new knowledge by people operating within the organisations, the extent of leadership and staff in key positions to consider the receptive context for change, and system readiness in terms of how intervention programmes are designed and implemented, including the people chosen to enact the roles. For this study, the infection control strategies of the organisations chosen for the case studies offered different services for infection control, including intermediary interventions, which provided resources and opportunities for different people.

External influences on intermediary programmes included the extent to which infection control strategy is comparable with other organisations (Greenhalgh et al, 2004a). The intermediary programmes reported in this study largely reflected those of other organisations in the structure and roles employed to operate the infection control strategy. However, in case one, the specific champion intermediary programme was noted to be unique and represented an intentional attempt to formalise an improvement programme designed to promote best practice. Political directives were transparent across the case sites, including mandatory policy reflecting national guidelines to reduce the risk of infections. However, as Greenhalgh et al (2004a) point out, “external mandates” may not always increase organisational capacity to change. In chapter one, reference was made to the influence of context on the successful development of champion intermediaries (Biebel et al, 2013). This study has examined how contexts (both inner and outer) influence the success or failure of intermediary programmes. The findings affirm the importance of considering, economic, political, and organisational contexts when

searching for success to change behaviour or practice in different settings (Grol & Grimshaw, 2003).

6.2.2 The CMOs

Four CMOs clearly showed replication across the two case studies. Mechanisms demonstrate “the things people working within the programme do or manipulate to produce the desired outcomes” (Timmins & Miller, 2007:10). Programme mechanisms evoke a response and “capture the many different ways in which the resources on offer may impinge on the stakeholders’ reasoning” (Pawson & Manzano-Sanataella, 2012:187). Collectively, the mechanisms demonstrate how the different intermediary programmes evoked responses by different people (Pawson & Tilley, 1997: 114), but only through being triggered by particular contextual conditions. Both case studies provided insight into the specific contextual conditions which were essential to activating the mechanisms at the point of study. Understanding the conditions was only achievable through undertaking the in-depth case study analysis. The contextual conditions uncovered by the data reflected, in realist terms, the essential criteria for successful intermediary actions. The contextual conditions were those which were “necessary for triggering programme mechanisms” (Pawson & Tilley, 1997:114). In this study, the findings confirmed that, in realist evaluation studies, definitions of context extend far wider than those linked to geography or location.

Together, the contexts and mechanisms found in this study contributed to a range of outcomes. In realist terms, outcomes are “predictions according to context and mechanism triggered” (Pawson & Tilley, 1997:114). Results, or outcome patterns, follow from “project intervention effectively triggering causal mechanisms in a context conducive to their operation” (Tilley, 1996:44). In realist terms, outcomes are not always measurable. However, they have potential in demonstrating response or change of behaviour or reasoning on the part of different stakeholders, and therefore warrant further exploration.

6.3 Turning to theory

The findings of the realist review found evidence which illuminated the initial programme theory. However, as will become evident in this discussion, the case

studies led to new findings. Therefore, in this chapter, a broader search for theories was conducted, to illuminate the significance of the findings for policy and practice. For realist evaluators, generating findings from different studies is not enough. Realist evaluation is a theory-driven approach which; “supposes that regularities in the patterning of social activities are brought about by the underlying mechanism constituted by people’s reasoning and the resources they are able to summon in a particular context” (Pawson & Tilley, 1997:220). In realist evaluation, theories may be implicit, so that the task of the evaluator is to make them explicit. Therefore, findings should inform and advance theory about phenomena, and, in particular, contribute to the development and refinement of mid-range theory (Pawson and Tilley, 1997).The contents of this chapter will show how the findings provide different ways to consider the potential impact of the intermediary.

In this study, the development of a set of conjectured CMOs in case one, which were built on and refined in case two, provided evidence of what was working for the study participants, in a given period under certain contextual conditions. For Merton (1967: 41), mid-range theories, (despite their less abstract, more testable characteristics), can still be; “consistent” with more general theories that exist to explain phenomena within social systems. Realist evaluation, with the emphasis on understanding contextual conditions, enables researchers to; “draw on theories of human behaviour that identify individual agency within social relationships as the key driver of behaviour change” (Prior & Mason, 2010: 221).

6.4 The Findings

The discussion chapter is structured through consideration being given to the demi-regularities which emerged from the data, to seek the evidence that explains how the findings can inform future policy and practice. In CMO 1, the elements that were magnified by the data, and showed most impact were; presence, proximity, and visibility. In CMO 2, individual styles and power, and collegiality in clinical areas were impactful. CMO 3 highlighted the significance of organisational priority and language of policy, together with approaches to providing feedback to promote good habitual behaviours. In CMO 4, practice-based approaches to education were noted to be significant factors. The following section considers each of the condition to

seek the theories that underpin them, and to understand their relationships with the mechanisms.

6.5 CMO 1

6.5.1 Presence

In the embedded units, clinical staff were familiar with the presence of different people within the hierarchy of unit or ward management. Participants were able to describe examples of roles, for example, medical consultants, clinical matrons, and managers who frequented clinical areas in the remit of their roles. In case one, the example of the chief executive being present alongside the healthcare support worker in clinical areas was cited. Therefore, presence by significant individuals with specific responsibilities for the overall management of clinical areas was normal practice, according to clinical staff participants. However, the study found that the presence of different intermediaries was not always related to hierarchical positions, but related to the enduring presence of the intermediary in the infection control role. Therefore, the intense presence of clinical champions who operated at peer level was as significant as those higher within the hierarchy to fire the right mechanism to promote or prompt better practice.

In CMO 1, the mechanism was specifically contingent on the impact of enduring physical presence of different intermediaries, a contextual condition which resonated across the two cases. The context described the intensity of presence of different intermediaries in the clinical areas and how it impacted on the success of their interactions with clinical staff. In turn, this triggered the mechanism of watching over practice to take place. For different intermediaries, the advantage of being present was that it enabled them to watch over what was going on in practice. Further, physical presence in clinical areas meant that the clinical staff were familiar with the intermediaries who frequented there. Physical presence enabled different intermediaries to engage with the prevailing infection control issues, and be able to observe and understand how constraints were impacting on infection control practices.

Presence is generally described as; “something present of a visible or concrete nature” (Merriam –Webster, 2013), and it is established that individuals change their

behaviour when in the presence of others (Kiesler & Cummings, 2002). Contrary to the findings of this study, presence which activates a behaviour change is normally associated with certain activities that strengthen the interactions between individuals, such as giving cues or assisting (Markus, 1978). Presence is generally associated with the success of intermediaries to reduce non-compliance in clinical practice (Doumit et al, 2007). In the review, evidence alluded to the significance of clinical presence in practice areas, but failed to provide an explanation of how and why this element of the intermediary role contributed to successful outcomes. However, in this study, what was noted was the impact of mere presence of different intermediaries (without cues or giving assistance), without or before any form of interaction. Establishing whether mere presence, as noted in CMO 1, was a significant contextual condition, is illuminated by the theory of social facilitation, which has been established as; “the effects of the presence of other people upon a person’s behaviour” (Guerin & Innes, 1982). Mere presence is explained in Zajonc’s (1965) drive theory of social facilitation (Platania & Moran, 2001). According to Markus (1978: 390), from a proposition put forward by Zajonc (1965); “mere presence is what is left when the present other does not offer the chance for imitation or competition, cannot control the performer’s reinforcement, and is unable to evaluate the performance or provide any relevant information”. According to Zajonc (1965), mere presence is enough to impact on another individual’s performance, but little evidence is offered to expand on this conviction. Further, the strength of this early theory has been disputed by the work of Cottrell (1968) who favours the different theory that; “the drive increment resulting from the presence of others is produced by the performer’s concern that these others will be evaluating his performance” (Markus, 1978: 390). The findings of this study show that this is an important area of enquiry which warrants further exploration.

This study found that clinical staff engaged with different infection control intermediaries, during which they were aware that their performance was being evaluated. However, observations found that direct interactions did not always occur. In such circumstances, the intermediary walking on to a ward or a specific clinical area and being seen was enough to trigger the behaviour modification or change. When Markus (1978) set out to explore mere presence in an experimental study which used simple task performance, she found that, with all opportunities to

performance evaluation being excluded, mere presence was a significant factor. The findings of this study reflect those of Markus (1978), whereby the sole presence of different intermediaries in clinical areas and their being seen (being visible), links to the “drive theory of social facilitation” (Markus, 1978: 396), implying that intermediary presence and being visible can lead to a behaviour or practice change. This finding shifts away from the recognised theories of social behaviour, “which, for the most part, stress the role of cognitive processes” (Markus, 1978: 396).

The actual impact of different intermediaries was contingent on their presence in clinical areas which ensured face to face contact between them and clinical staff. Intermediaries discussed how presence, and the level of interaction between them and clinical staff, was often reliant on their specific roles. For example, in case one, the champions were regularly present in clinical areas because of the clinical component of the role, and this finding reflected the suggestion in the review that working closely with clinical staff was the trigger to promoting best practice (Barry & Carter, 2010). In case two, where a more distributed approach was noted, physical presence was often contingent on the intermediary’s role and responsibilities (i.e. charge nurse/staff nurse). In some embedded units, information technology, for example email, was cited as an alternative method for contact with clinical staff. However, the success of the CMO was generally noted to be the result of the enduring presence of different intermediaries, enabling them to be near to, and enable interact with clinical staff. This finding raises the possibility of considering other means of actualising presence, similar to policing to ensure greater intensity of presence. This finding leads to the following section which explores the concept of proximity, to consider what can be learnt from the study for future practice.

6.5.2 Proximity

Proximity, as a concept, was not significant in the realist review. Whilst Barry and Carter’s paper alluded to the influence of working side by side with clinical staff they did not articulate why or how working alongside might have an effect. Proximity is generally considered to benefit relationships and functions within different social groups (Kiesler & Cummings, 2002). An early study by Sykes et al (1976: 268) found that the impact of proximity on interaction between individuals is the result of a condition in which the interaction takes place, which they term;

“interaction obligation”. According to Sykes et al (1976:268), proximity is most influential when people share space, or “proxemic norms”, whereby space between people is influenced by factors such as culture or behaviour. This condition was noted in this study, whereby the physical presence of different intermediaries was often intertwined with the interactions between them and clinical staff. Examples were provided of intermediaries working closely together with clinical staff (described as “mucking in” by one participant), enhancing their shared experience of space and proxemics. In other examples, intermediaries interacted with clinical staff through face to face communication, discussions of relevant issues, providing advice and guidance and social interaction, for example, through the use of banter. Sykes et al (1976:268) suggested that further exploration of the impact of “personal meaning of space” and proxemics should be undertaken to develop understanding of the significance of proximity on the interaction between individuals.

In the healthcare literature, proximity is usually discussed in terms practitioner-patient relationships, or the impact of geographical proximity between individuals and clinical areas. For example, in a report compiled by the Royal College of Nursing Institute (2004), the clinical involvement of the matron role was enhanced where consideration was given to the proximity of the matron’s office to the ward or clinical area. Generally, there is a clearly paucity of evidence which has examined the significance of proximity between individuals, and the impact that this might have on interaction between them. In light of the findings of Sykes et al (1976), much more needs to be understood about the influence of space and proxemics on social interaction between humans. In CMO 1, where patterns were noted of intermediaries sharing space and norms with clinical staff (such as their professional role, or banding), this appeared to enhance the success of the intermediary to watch over practice and staff adherence to best practice through fear of being caught out or not being seen to play the right part. In this way, there was interdependence between the contextual condition and the mechanism. However, the literature reveals the lack of attention that has been afforded to this condition, particularly in the infection control domain.

The findings of this study build on Sykes et al (1976), and highlight the potential benefits of understanding more about the influence of proximity, and how

intermediary roles can be developed to exploit the condition of interaction obligation to promote best practice. Additionally, in this study, the dyad of presence and being visible to clinical staff was observed to lead to behaviours being modified or changed amongst individuals, reflecting the interlinking of this noticeable finding from the study.

6.5.3 Visibility

Contrary to the lack of evidence to suggest that being seen was a significant factor in the review, the findings in this study raise important questions about how being visible can be operationalized more consistently. Being visible, as unearthed in this study, links to the thinking behind Bentham's panoptic tower. Although originally conceived as an "architectural figure" of power (Foucault, 1975: 200), the principles which drive the idea of the Panopticon can be broadly extended to different situations to examine the internal power relationships. According to Foucault (1975: 202); "he who is subjected to a field of visibility, and who knows it, assumes responsibility for the constraints of power; he makes them play spontaneously upon himself; he inscribes in himself the power relation in which he simultaneously plays both roles; he becomes the principle of his own subjection". Foucault (1975: 201) describes this as the; "major effect of the Panopticon: to induce in the inmate a state of conscious and permanent visibility that assures the automatic functioning of power". The beauty behind this theory was, according to Foucault, that it assumed individuals were under supervision all the time, where, the reality was quite different. In this study, being visible often resulted in a response of changed behaviour or action, and where intermediary presence was clinically embedded, clinical staff were more aware of being watched more consistently. In this state, conformity was noted by study participants, reflecting what is described as the only "realistic option" (McCahill & Norris, 2002: 2).

From another angle, the findings also support the earlier findings of Perry (1998) who found that infection control intermediaries who were clinically based were better placed to make an impact about infection control issues in clinical areas. In this study, visibility provided the intermediaries with the armour to trigger change or modify the behaviours of participants, supporting the research that has linked change to social influence, especially the desire to conform with influentials (Semple, 2001).

The significance of conformity in the presence of influentials is an important factor that illuminates the potential influence of different intermediaries to getting individuals to change or modify their behaviours. The findings of this study also support Semple's (2001) argument that a better understanding of social influence theory is required, to understand the behaviour of healthcare staff in clinical settings.

Whilst the traditional view of direct supervision is of a person of seniority overseeing others, drawing on the work of Bentham and the Panopticon, power can be "invisible but unverifiable" (Foucault, 1975:201). Therefore, the seniority of the person who stands in a central point is inconsequential, because they are unseen. Applying the Panopticon theory to the findings of this study where clinical staff were being observed by different infection control intermediaries, this suggests that intermediary roles can transcend across different levels. In this study, intermediary roles were identified at clinical as well as managerial level. In case one, in particular, the intermediary programme was centred around the clinical level of the post-holders, but their impact was powerful in clinical areas. This discovery supports the work of Locock et al (2001), who found that peer-level intermediaries were found to be more persuasive by others. In contrast to the evidence which has traditionally linked visibility with senior leadership (Griffiths et al, 2009), in this study, visibility often related to intermediaries in a non-managerial role, but with ascribed responsibility for infection control practices (for example, clinical champions or infection control link nurses). Further, the findings support those found in the review as to how the clinical credibility of intermediaries was considered to impact on infection prevention practices (Edden & Willan, 2009), and how Rogers (2003) recognized the potential of champions operating at different levels, not necessarily from positions of power or authority.

In terms of peer level monitoring, Andrejevic (2005: 479) has coined the phrase; "lateral surveillance" to describe approaches in which peers monitor each other, pointing out, in a quotation that closely resembles with the mantra of infection control being everybody's business; 'in an age in which everyone is to be considered potentially suspect, all are simultaneously urged to become spies'. Whilst lateral surveillance is largely associated with the use of technology, the findings of this study about the potential of peer-level intermediaries to monitor practice highlight

that ways in which these theories can be explored, are largely under studied in healthcare literature.

6.5.4 Visibility in other disciplines

In general, little evidence exists to link the impact of visibility and infection control practice, despite it being deemed as an important strategy (Gardam et al. 2009). Historically, for infection prevention and control, the focus has been on the visibility of leaders as in a supervisory capacity (Healthcare Commission, 2007). Direct supervision is associated as being concerned with; “activities of some individuals by others in position of authority over them” (Giddens, 1985: 14). However, these findings have highlighted the potential impact of being visible by intermediaries at different levels of authority.

“Seeing our faces” was symbolic, and was enacted by more than one intermediary, reflecting its significance for participants. The phrase implies that being visible was perceived as an important strategy for the intermediaries, and that there was some purpose to this action, and resonates with studies conducted in other disciplines. One example is in the policing literature, whereby visibility is often linked to public reassurance (H.M. Inspectorate of Constabulary, 2002). Police presence and visibility are also linked in criminology studies. Kelling and Wilson (1982) posited that police visibility should be more focused in areas which are at a higher risk of crime. In their view, “the essence of the police role in maintaining order is to reinforce the informal control mechanisms of the community itself” (Kelling & Wilson, 1982). They found that the key to success revolves around identifying areas which were at the tipping point of change; “where the public order is deteriorating but not reclaimable, where the streets are used frequently but by apprehensive people, where a window is likely to be broken at any time, and must quickly be fixed if all are not to be shattered”. Transferring these ideas to the domain of infection control is important, to understand more around how intermediary visibility is received in clinical areas, and to consider whether new intermediary programmes need to be more strategic, targeting intermediaries in clinical areas which are recognised to be at the tipping point where best practice is concerned. In this way, introducing intermediary roles to certain clinical areas would not be based on

prevailing infection rates, but based on where they; “will make the greatest difference” (Kelling & Wilson, 1982).

6.5.5 Watching practice

Presence was a condition which enabled different intermediaries to watch over practice across the case studies. During the course of data collection, watching practice was not always reported by participants, but was implied and supported by observational data. Evidence showing this was contingent on observational and interview data, as opposed to being made explicit (for example, written in job descriptions). The idiom “eyes and ears” was a metaphor used by more than one intermediary participant to describe what they meant by this. Use of the terms “walkabouts” and “huddles in bays”, described opportunities whereby intermediaries interacted with clinical staff at regular intervals, and which afforded opportunities to watch practice, including infection control practice. In this way, intermediaries were more able to see what was going on, and could pre-empt potential problems. Clinical staff sometimes reflected how they were aware that watching over practice was being undertaken by different intermediaries, and this was reported in the data. However, in general, this was not perceived as threatening by them. In a way, it was described as a natural occurrence. This finding is not altogether surprising as it reflects the current professional development model and regulatory requirements, familiar within healthcare, whereby apprentices are subject to periods of being watched through supervision of practice (NMC, 2008).

6.5.6 Surveillance

Where intermediaries were watching over, they were in possession of knowledge and information about different elements of clinical practice, which enabled them to take action if required. Whilst the use of the word “surveillance” was not made explicit throughout the study, it was implied through the language used by participants to describe what they were doing. Surveillance, in this study, was often a subconscious activity. Traditionally defined as “close observation” (Marx, 2002:10), surveillance has long been used as a powerful tool to protect social values (Dawson et al, 2005). As human beings, we already live in a surveillance society, and it has become an inherent way of life (Lyon, 2008). Surveillance has also been lauded as the “key to

management” for modern capitalist times (Giddens, 1987: 175). It is not surprising that the word surveillance was not used during data collection due to its controversial connotations (Lyon, 2008). In healthcare, as in wider society, surveillance is more likely to be viewed negatively (Cooper, 2013). Through turning to broader theory, conceptualisations of surveillance are explored to consider the implications of the study’s finding for future research and practice from the perspectives of organisational and human surveillance.

6.5.7 Organisational surveillance

Performance monitoring, as observed as part of the organisational strategy for infection control across the two case sites was a form of organisational surveillance, which uses data to inform employees how their performance is perceived within the organisation (Sewell et al, 2012). For Timmons (2003), organisational and social contexts should be considered in the implementation of different surveillance systems. In this study, proximity and watching practice, through the intermediaries, formed part of the organisational strategy to prevent and control healthcare infections. Through an organisational approach and incorporating performance management, surveillance has traditionally implied a form of punitive control, underlying the traditional employer/employee relationship. Whilst Lyon (2001) argues that conforming to the concept of a surveillance society is to accept a disembodied form of surveillance that threads inherently through people’s lives in the social world, the word still implies a form of management control for some. According to Sewell and Barker (2006), the underpinning concepts which describe surveillance are; coercive and caring. However, the parameters of organisational surveillance are less clear, and interpretations revolve around its legitimacy, on one hand, and coercion on the other (Sewell and Barker, 2006).

In healthcare, tensions between professional and managerial perceptions of control exist (Timmons, 2003). Direct monitoring of staff performance in healthcare is often difficult, because of the nature of the structures in which they inhabit and professional autonomy. However, performance monitoring is also mandatory, stemming from the introduction of governance and increased propensity for patients to litigate around harm and poor practice (Timmons, 2003). This approach to surveillance naturally leads to divisions between “good” and “bad” employees which

lead to the shaping of behavioural norms (Sewell & Barker, 2006). Caring surveillance is “policing the contractual arrangement between principal and agent to minimize opportunistic behaviour” (Sewell et al, 2012: 191), and is more acceptable for employees and employers as it implies surveillance is undertaken for the greater good (Sewell et al, 2012). Coercive surveillance, on the other hand, is performance measurement “as a case of the few watching the many in the interests of the few” (Sewell et al, 2012: 191), and can lead to resentment amongst individuals.

For infection control, the word surveillance is normally used to describe the process of collecting data, for example, rates of infections/outbreaks (APIC, 2013). Sewell and Barker (2006: 934) label this form of surveillance; “benign, technical and protective”, and consider it as being different from the coercive or caring forms of surveillance described in the literature. In this study, during the course of data collection, participants would refer to tools that were familiar to them, usually used to monitor levels of adherence and compliance with policy, for example, audit or measuring rates of gel in hand gel bottles. However, the findings of this study found that surveillance had an additional meaning, which was closely aligned with watching practice. The findings support the argument put forward by Sewell and Barker (2006: 935), whereby organisational surveillance can be simultaneously; “caring and coercive”.

To consider the implication for future policy and practice, this finding was explored through a Foucauldian lens, to understand how surveillance of people who operate in organisations and institutions (such as hospitals), is historically drawn from knowledge of the impact of discipline in social systems. In his writings, Foucault (1975) expressed his conviction that human beings exist under constant surveillance, wherever they are located (Vaz and Bruno, 2003). Foucault (1979:228) pointed out; “Is it surprising that prisons resemble factories, schools, barracks, hospitals, which all resemble prisons?” This quotation illustrates how Foucault’s work on prisons and discipline evolved to broader comparisons with other organisations and institutions, such as hospitals. From early observations of retributive discipline, right through to drawing on Bentham’s work on the potential of the Panopticon, Foucault focused his attention primarily on the social and psychological impact of surveillance on people (Henderson et al, 2010). From early conceptions, Foucault’s work on discipline and

punishment has led to current understanding about how constant surveillance operates, and how it impacts on individuals and organisations (Henderson et al, 2010).

In this study, watching practice, as observed in CMO 1 implies that surveillance was on-going, but was not always articulated. Further, surveillance of practice was fired as a result of the presence and proximity of intermediaries in clinical areas. However, the intended impact of watching practice on others (i.e. clinical staff) was not always made explicit. Rather, intermediary participants discussed “watching over” as an inherent part of their role. In other words, the purpose of watching over practice was not explored by intermediary participants. In order to explore this further, the next section turns to the concept of human surveillance.

6.5.8 Human surveillance

On a carceral continuum, different levels of surveillance swing from formal to more informal ways (Henderson et al, 2010). The concept of informal surveillance represents the idea that the equilibrium of society is maintained through covert forms of discipline (Burrell, 1988). In a way, this alludes to the idea that we are, as members of society, all involved in forms of informal surveillance. Informal surveillance is generally undertaken through different interactions with colleagues and co-workers (Henderson et al, 2010). On the other hand, more formal surveillance is usually undertaken through formal institutions (Henderson et al, 2010). In this study, the human forms of surveillance undertaken by the intermediaries in this study fit with the description of the carceral continuum. Formal surveillance formed part of the intermediary role and included carrying out tasks, such as data collection and audit, to meet the objectives within the organisation’s infection control strategy. In this way, the findings reflected those in the review which described the purpose of different intermediary roles to support policy and strategy.

However, the informal surveillance intermediaries undertook was described as a subconscious activity, carried out during different interactions with clinical staff, in an enactment of their intermediary role. For an individual to be subject to surveillance is considered to act as a vehicle which enhances self-awareness and influences behaviour (Henderson et al, 2010). Further, whilst surveillance is not

always intentional, it is, according to Foucauldian thinking, an integral part of humanity. In this study, different intermediaries were acting out a form of human surveillance. This is a novel finding, and highlights the lack of current evidence to show how human surveillance can contribute to promoting best practice.

The human surveillance theme observed in this study was constructive and caring, as opposed to the more punitive connotations of surveillance. It is argued that much more needs to be understood of how different forms of surveillance can be used to promote best practice, and in particular, how can human surveillance be integrated into organisational systems which are already established. Lyon (2003) argues for surveillance today to become humanised again. According to Coleman (2004: 238), “it is the face that needs to be brought back into the equation, for it is the face that forms the basis for ethically and morally regulating and humanising the surveillance society”. Through examining ways in which practice is monitored, the potential impact of promoting self-surveillance amongst clinical staff has been magnified, a significant contribution to showing ways in which intermediaries can promote best practice.

6.5.9 Self-surveillance

The outcome of proximity and watching over was that participants were noted to be more attentive to their own practice. The outcome reflects the observed response of clinical staff to the context and mechanism dyad, whereby participants reported using a different thought process, checking their own action or behaviour when different intermediaries were near to them. In the words of one participant, their response was to “click on”. In this way, this acted as a cue, so that staff were responding to intermediary proximity and how they watched over practice. This finding reflects the theory of social impact, broadly defined as any change that occurs as a result of the; “real, implied or imagined presence or actions of other individuals” (Latane, 1981: 343). The finding was noted during observation periods, and sometimes reported in interview data to reflect the action of participants “checking” what they were doing, providing opportunities for clinical staff to undertake self-surveillance.

Self-surveillance is defined as “the attention one pays to one’s behaviour when facing the actuality or virtuality of an immediate or mediated observation by others whose opinion he or she deems as relevant – usually, observers of the same or superior social position” (Vaz & Bruno, 2003). A better understanding of the intricacy behind this is illuminated by considering the “conceptualization of internalized control” (Henderson et al, 2010: 236). Self-surveillance implies that power rests with the individual, as opposed to that of the organisation. As explained by Henderson et al (2010: 236), self-surveillance implies that; “people who are subject to the formal rules and regulations of the social institutions have simply internalised those rules, to the point that they have become normative”.

The concept of self-surveillance can be extended to include that of self-monitoring, and concerns; “individuals’ attention to their actions and thoughts when constituting themselves as subjects of their conduct” (Vaz and Bruno, 2003: 273). Norris and Armstrong have termed this process “habituated anticipatory conformity” (1999:6). In considering ways in which to promote best practice through changing the behaviours of clinical staff, this concept warrants further exploration. Whilst, in this study, human surveillance was not possible all of the time, data collected through observations and interviews showed that when different intermediaries were present in clinical areas, they enacted a form of human surveillance.

In summary, this study showed the significance of presence and proximity of intermediaries, and how they watched over practice. This finding shows that there is a need to develop further understanding of the link between intermediary proximity in clinical areas and the impact of felt surveillance (Kiesler & Cummings, 2002). In CMO 1, the potential impact of human forms of surveillance was magnified. Through acting in this way, intermediaries were able to collect information and knowledge, and were well- informed. However, intermediaries were also able to understand the issues faced by clinical staff.

6.6 CMO 2

6.6.1 Individual styles

Social learning theories show that liked and trusted individuals are more likely to be successful in triggering behavioural change amongst people (Doumit et al, 2007).

The ways in which different intermediaries used individual approaches and styles to build relationships with clinical staff triggered the mechanism of feeling personally supported, resonating with the leadership theory of negotiator and conciliator described by Mintzberg (1973). These findings link closely with theories of distributed leadership and lateral surveillance. As Inglis (2004) points out, most of the existing leadership evidence base focus on individuals in roles which require them to use leadership skills and characteristics, or demonstrate leadership capabilities in ways which; “others respond to, support and accept an individual’s ideas and behaviours” (Health Service Executive, 2009:11). In contrast, distributed leadership theories postulate that leadership takes place at different levels, and suggests a different approach to leadership that moves away from the more traditional individual’s transactional leadership contribution (Tomlinson, 2012). It is argued that the traditional focus on some individuals (often in positions of seniority), misses the potential contribution of others within teams (Tomlinson, 2012). More recently, the focus has shifted to encourage models of leadership which move away from the “heroic” leader approach (Inglis, 2004), and towards a model which is characterised by being “shared, distributed and adaptive” (The King’s Fund, 2011:22).

In the review, intermediaries were identified as agents of change, and this was linked to transformational leadership styles. However, what the study shows is that distributed leadership models resonate more clearly with the findings. Further, the evidence presented in this study, whereby different intermediaries were involved in efforts to promote collegiality in clinical areas, thus enabling the provision of support and reassurance for clinical staff, echo findings elsewhere which reflect the importance of collegial trust in healthcare settings (Jones & Jones, 2011). The findings also reflect the concept of authentic leadership models (Wong & Cummings, 2009). In efforts to differentiate transformational and authentic leadership, Avolio and Gardner (2005: 329) refer to authentic leaders being; “anchored by their own deep sense of self; they know where they stand on important issues, values and beliefs”. In this study, different intermediaries demonstrated their commitment to infection prevention and control, resonating with the model of authentic leadership proposed in the literature.

The next section considers what can be learnt from understanding, through the idea of human surveillance, how the intermediaries were arming themselves with knowledge and information about clinical practice. In Foucauldian terms, this was the embodiment of power. The next section explores the relationship between the findings of the study and the concept of power.

6.6.2 Authority/Power

In the realist review, the individual styles and approaches of different intermediaries were described, and the theme of power was hinted at (for example, Saint et al, 2008). However, the review lacked detail to show how authority and power can influence the success or failure of intermediary interventions. According to Jarvis (2012), classic definitions of power are often unhelpful as they do not always reflect the breadth of human relationships or the balance within power relationships. Foucault gave rise to the idea of the “penetrative gaze” of observation and surveillance as mechanisms for the storage of information and knowledge. This thinking initially stemmed from learning about discipline and punishment processes used from the eighteenth century (Henderson, 1994). Information and knowledge act as vehicles of power, in the same way that (in this study), watching practice led to opportunities for the intermediaries to use power. Foucault’s ideas of power are often perceived as a form of power which infiltrates at all levels within organisations, and is described as “hierarchical observation” (Henderson, 1994: 936). According to Foucault (1979: 177), the beauty of power achieved through hierarchical observation is; “it is everywhere and always alert, since by its very principle it leaves no zone of shade and constantly supervises the very individuals who are entrusted with the task of supervising”.

Surveillance is normally associated with two types of power, coercive and expert (Cheney et al, 2004), which implies the influence of hierarchical observation. However, Foucault also believed that power could be constructive as well as constraining (Holmes & Gastaldo, 2002). In this way authority and power is achievable through organisational influence, as well as, in Foucauldian terms, being related to humans and human behaviour. According to Holmes and Gastaldo (2002: 558), Foucault’s idea of constructive power; “is innovative because power has been conceived of traditionally as only a negative and repressive force”. The idea of

constructive power, which is related to human behaviour, as opposed to organisational factors, more closely resembles the findings unearthed in the study, whereby intermediaries were observed to be forming and using their authority and power in a constructive way in their interactions with clinical staff in efforts to promote best practice for infection control.

According to Foucault, power is inherent and is everywhere (Vaz & Bruno, 2003). For Foucault, “power does not reside in things, but in a network of relationships which are systematically interconnected” (Burrell, 1988: 227). This observation is relevant to the findings of this study, whereby watching over practice was closely associated with the condition of presence and proximity. In this way, the intermediaries and clinical staff were bound together in relationships in clinical areas. However, whilst watching over practice provided the intermediaries with information and knowledge, in a form of power if viewed through the Foucauldian lens, the power did not solely rest with the intermediaries. Instead, power was a subconscious activity. For Foucault, power is not solely “repressive”, but was a multidimensional force influencing the creation of the concept of the “self” (Holmes & Gastaldo, 2002:559). Instead, it was a fluid construct (Holmes & Gastaldo, 2002), observed to be inherent through the interactions that the intermediaries and clinical staff had with each other, in a much more constructive approach, and supported by data which illuminated participants’ mutuality and respect, and how clinical staff appeared to want to be seen to play the right part.

This finding can develop better understanding of how authority and power can be construed to promote best practice. In infection control, the potential of social power, defined as; “the potential ability of an influencing agent to change the cognitions, attitudes or behaviour of another person (the target) in infection control” (Seto, 1995: 108) uses six definitions of power: coercive, reward, legitimate, expert, referent, and informational. Seto (1995) found that the forms of social power most likely to be influential for clinical staff in infection control were informational and expert. Informational power was defined as “the persuasiveness of the information communicated by the agent to the target” (Seto, 1995:108), whilst expert power was interpreted as “the target’s attribution of superior knowledge or ability to the agent” (Seto, 1995: 108). According to Seto (1995), informational and expert power were

found to be the most likely approaches to ensure conformity with infection prevention and control policies, and have been advocated for future use by “influencing agents”.

Contrary to the studies described by Seto (1995), the findings of this study showed that power was inherently a very different concept, made evident by the relationship observed between the conditions of presence/proximity and the how clinical staff wanted to be seen to be playing the right part in infection control. In fact, the nature of the power exerted by the intermediaries was much more about support and nurture for clinical staff, resembling the pastoral embodiment of power. The findings also reflected the ideas out forward by Rogers (2003) who theorised that champions could operate effectively at different levels.

6.6.3 Pastoral power

The ways in which intermediaries used individual styles and approaches resonates with pastoral power which was conceptualised by Foucault, and described by Holmes (2002: 90) as the development of an “efficient alliance”. According to Holmes and Gastaldo (2002: 562), pastoral power; “requires a person to serve as a guide for another”. Using power in a constructive way, as in CMO 2, whereby intermediaries were noted to “cushion” clinical staff, implies that a nurturing form of surveillance was going on, achieved through guidance or “caring” (Lyon, 2008) on the part of different intermediaries. In Foucault’s conceptualisation of pastoral power, he speculated that those who guide others also exert a degree of power over them (O’Byrne & Holmes, 2009). According to Vaz and Bruno (2003: 273), “those who exercise power attain legitimacy by presenting themselves as helping us in caring for this part of ourselves that threatens our constitution as subjects”. In this study, intermediaries were often observed to place themselves in a caring and supportive role, and they made efforts to develop trusting relationships with clinical staff. Examples drawn from data collection showed that different intermediaries made efforts to act in non-confrontational ways with clinical staff.

These findings are evidence in other disciplines whereby different intermediary roles are able to combine both supportive and surveillance functions. For example, Holmes (2002) found that nurses used similar means to employ control over inmates

within the penitentiary system. In the field of criminology, “human trackers” are used in multi-modal programmes for young offenders, a term that describes their ability to shift their actions purposefully from surveillance to supervision as and when required. In this way, human trackers are often conceptualised as being in mentoring type roles, which are focused on developing relationships with offenders but also acting as the intermediary between supervision and surveillance (Moore, 2005). Other examples are drawn from criminology studies where befriending and linking programmes are considered to be influential (Nellis, 2004). Linkers are described as individuals provided with training to “build relationships and influence behaviour” (Nellis, 2004: 85). This notion resonates with the use of link roles in healthcare, including infection control practice. Although link nurses for infection control were identified as intermediaries during the course of this study, it was not a concept universally used, and the exact purpose of the title was not always clear. For Moore (2005), the use of human trackers promotes the idea of role modelling as conceptualised through social learning theory. However, tracking, as used in criminology, implies one-to-one supervision and support, whilst other approaches such as linking agents resonate more with the findings of this study, where surveillance and support was focused on groups of people i.e. clinical staff. However, what emerged in this study to warrant further exploration was the impact of human surveillance on the practice of clinical staff.

6.6.4 Collegiality

In the review, the issue of pre-existing relationships between people emerged as being significant as influencing the impact of different intermediaries (Damschroeder et al, 2009). However, the review evidence was lacking in detail that explains the particular elements that can impact on success to promote best practice. The ways in which the mechanism of feeling personally supported emerged resulted from the efforts by different intermediaries to build relationships with clinical staff. The concept of building trusting relationships is typical of the enabling attributes already discussed as a requirement by intermediaries if they are to facilitate evidence based practice within organizations (Milner et al, 2005; Stetler et al, 2006). Desirable intermediary characteristics resonated through the realist review, drawn from the social cognition theory that; “most human behavior is learned observationally

through modeling: from observing others one forms an idea of how new behaviors are performed, and on later occasions this coded information serves as a guide for action” (Bandura, 1977: 22). The study’s findings showed how efforts to build collegiate approaches in clinical areas through relationship building promoted a sense of personal support for clinical staff.

Resonating with the previous discussion on distributed leadership, Jarvis (2012) describes how the concepts of collegiality and distributed leadership are often described as being interchangeable, however they are conceptually different. For example, in education, whilst collegiality and distributed leadership are promoted widely, collegiality is presented as a leadership and management model, as opposed to being a “power relationship” (Jarvis, 2012: 482). Through revisiting the previous discussion on the impact of hierarchical observation and power, it is clear that promoting collegiality requires the support of those in positions of power within organisations (Jarvis, 2012). However, the findings of this study support the contribution of the intermediary to promoting collegiate environments, in the same way as facilitators have been noted to promote collaboration and relationship-building (for example, Stetler et al, 2006). Further, the findings related to intermediaries building relationships to provide support for clinical staff reflect the findings of Dogherty et al (2010), who found that the concept of facilitation involves the impact of individuals as much as the process. In the context of the findings of the current study, this finding also signifies the importance of organisational and management support as well as individual contribution through different intermediaries to promote collegial relationships in healthcare services.

6.7 CMO 3

6.7.1 Organisational priority

In the review, strategy and policy featured as a theme reflecting the origins of different intermediary roles (Edden & Willan, 2009; Barry & Carter, 2010). However, in the findings of the study, the priority afforded to infection control by the organisation, often noted in the language of policy, echoed across both case studies as a contextual condition which impacted on the study’s findings. Discourse is defined as; “language use anchored in an institutional context, expressing a fairly

structured understanding or a line of reasoning with active, productive effects on the phenomenon it claims to understand neutrally” (Alvesson, 2002: 48). Policy discourse also triggered different intermediaries to use specific ways to provide feedback for clinical staff. According to Ball (2006: 44), in discussing interpretations of policy, and whether it constitutes text or discourse; “policy is not one or the other, but both, they are implicit in each other”. The discourse of phrases observed in policy and guidance, and used by participants in clinical areas resonated across the two case studies. The use of this language was noted on more than one occasion during data collection. For example, the mantra of zero tolerance, in particular, was clearly reflected in the documentation review, as it was a key strategy within the organisations’ infection control policies, and reflected the overarching aim of striving for zero healthcare infections by governments (WG, 2011a: NICE, 2012: Millar, 2012). Often, infection control intermediaries were observed to use phrases such as “bare below the elbows” in their verbal feedback to clinical staff on their performance. Examples were provided in case study one, in particular, whereby the phrase was used to refer to policy where individuals were found not to comply, for example, wearing of jewellery or wristwatches.

Zero tolerance was a particularly significant example of how policy discourse was acted upon in practice, but did not emerge as being influential in the review, contrary to the study’s findings. From a reading of the Foucauldian concepts of governmentality and power, they shed light on the significance of policy discourse in this CMO. As in the previous findings, looking at this CMO through the Foucauldian lens is useful, especially to consider what can be learnt from other disciplines. For Foucault, governmentality encompassed “a historically specific economy of power-in which societies are ordered in a de-centred way and wherein society’s members play a particularly active role in their own self-governance” (Dupont and Pearce, 2001: 125).

6.7.2 Policy discourse

Whilst little attention has previously been given to how the concept of governmentality can be applied in healthcare, McKee (2009) points out that other disciplines, for example, crime, local government, public service reform and housing have benefited from applying the principles of governmentality to elicit better

understanding of power and rule. In fact, closer reading suggests that parallels can be drawn between governing in the field of criminology and the domain of healthcare. According to Hewitt (2009:6); “Foucault’s concept of power suggests ways of studying the detailed dialogue of policy making and its implementation in order to understand the manifest practices of resistance, collaboration or co-operation”. In other words, better understanding of the impact of policy discourse on the behaviour of practitioners could illuminate what triggers collaboration, or what fosters resistance. However, viewing the policy discourse through the Foucauldian lens of governmentality illuminates its impact in a different way.

In criminology, for example, Garland (2001) has suggested that the introduction of powerful discourse such as “zero tolerance” is reflective of a state trying to reconnect with sovereign power (Norris & McCahill, 2006). Alternatively, it could be a reflection of more recent emphasis on prevention and risk management (McCahill & Norris, 2002). The latter interpretation fits with the healthcare parameters of this study, where policy discourse is an inherent component of organisational risk management and prevention. Akin to the use of the concept of zero tolerance in criminology, McCahill and Norris (2002:9) point out that; “the emphasis on risk makes everyone a legitimate target for surveillance”. However, the problem for the infection control domain is that the term may more frequently be associated with “unsafe behaviours and practices that place patients and healthcare workers at risk” (Apic, 2008). This contrasts with the intended aim of the term zero-tolerance; “to stress the need for accountability and a culture built on inquiry and learning as opposed to punishment”. (Apic, 2008), and highlights the importance of considering the meanings within language, and how individuals interpret the discourse within the policy and guidance of healthcare systems.

6.7.3 Policy discourse in infection control

In this study, different intermediaries enacted the policy discourse through language and action. The policy discourse was represented most strongly by the zero tolerance mantra. However, other examples of policy discourse used in infection prevention and control, reflecting the emphasis on risk were noted during data collection, and related to the branding of preventing healthcare associated infections as “everybody’s business”. “Bare below the elbows” was initially introduced by the

Department of Health in 2007, and launched as a national strategy throughout the United Kingdom in 2008 by the health secretary (Biggs, 2011), with the aim of making it compulsory practice within healthcare organisations in England (Baxter et al, 2010). However, according to Baxter et al (2010: 248), this policy “caused great controversy due in no small part to the lack of evidence surrounding its implementation and the lack of discussion with the profession”. Subsequent studies have focused on the impact of this policy on patient preference for clinical staff attire (Bond et al, 2010: Biggs, 2011). In other data, this study highlighted the ways in which intermediaries used policy discourse to highlight risk, through being verbal about the importance of patient safety, reflecting the ways in which the notion of safety culture is promoted associated with human factors (Storr et al, 2013). The findings add to the review, where policy and strategy were identified as strong contextual influences.

6.7.4 Zero tolerance

The zero tolerance approach has conceptualised by different disciplines which is helpful to consider the significance of the policy discourse in this CMO. Paterson et al (2008) discuss how the origin of the “zero tolerance” concept stems from the principles of the “broken windows” criminology theory. This was first introduced in an article by Kelling and Wilson (1982) on police and neighbourhood safety. The original premise of the theory was that; “the tolerance of low-level disorder is the proximal cause of serious crime in certain neighbourhoods” (Paterson et al, 2008: 27). This theory implies that if less serious examples of crime are ignored and/or tolerated by members of society, it will inevitably lead to an increase in crime and disorder (Paterson et al, 2008). Whilst the article initially received little attention, the concept was later lauded as being successful following the introduction of efforts to reduce crime in New York City, where the use of the zero tolerance policy was deemed to be very effective. The principles behind the policy were thought to work because “it adopted a simplistic distinction between two kinds of people; model or decent citizens and bad people who deviated by choice” (Paterson et al, 2008: 27).

In education, zero tolerance policies; “have become the “episteme” of standardized solutions to complex issues” (Daniel & Bondy, 2008: 4). Additionally, the zero tolerance mantra has been used in policing and healthcare in the United Kingdom

(Paterson et al, 2008). However, its introduction in disciplines other than policing and criminology is problematic. According to Daniel and Bondy (2008: 4); “the problem arises from the assumption of zero-tolerance policies that individuals act/transgress in a rational manner, and is based upon the premise that if the possibility that they will get away with the transgression is zero, they will not do it”. For example, Paterson et al (2008: 31) reflected on the reasons for the failure to implement the zero tolerance policy in mental health services to combat violence against nursing staff. They cite one of the reasons was because; “the origins of the phrase zero tolerance and the approach it represented were already widely associated in the consciousness of the public – and therefore of healthcare workers – with punishment for those who transgressed” (Paterson et al, 2008: 31).

In infection prevention and control, the NHS is committed to zero tolerance to preventing avoidable infections (NICE, 2012), with blaming, shaming and financial penalties being incurred where infection rate targets are unmet (Millar, 2012). It is argued that prevention can be justified; “when irretrievable burdens to individuals can be prevented without the re-distribution of comparable burdens to others” (Millar, 2012:2). However, the general promotion of zero tolerance can potentially affect public confidence in healthcare providers in a negative way by “imposing unrealistic and unreasonable expectations” (Millar, 2012:5). Millar’s paper, in which he analyses the concepts of zero tolerance using the contractualist perspective of Thomas Scanlon, emphasises the complexities surrounding the use of the concept in infection prevention and control.

6.7.5 Feedback which is positive and reinforcing

The regular provision of feedback to individuals or teams was noted during data collection, and was often related to the intention of policy such as zero tolerance, and bare below the elbows. In the review, whilst intermediaries were thought to implement change, there was little detail provided to illuminate how exactly how change can be initiated. Feedback has already been uncovered as a strategy to increase the likelihood of success in establishing evidence use in complex service research (Greenhalgh et al. 2004b). Provision of high levels of feedback for individuals and teams has previously been recognized as an important element contributing to success in implementation (Rycroft-Malone, 2004). That credence

was given in this study to the use of feedback in infection control practice reflects the findings of Grol and Grimshaw (2003) who stressed the importance of the regularity of feedback. However, in this study, it was a particular approach to feedback that was noted to be most significant.

Whilst different intermediaries reported how they had to provide feedback which was negative in nature, for example to report poor audit results, or where individual practice required correcting, one of the most noticeable features of feedback which resonated throughout the case studies was the ways in which intermediaries used positive and reinforcing ways to convey feedback to clinical staff, using praise and positive feedback to encourage clinical staff to reflect on their own practice, and using the underlying strategy and infection control policies where relevant to remind staff how they should be practising. Intermediaries discussed the need to keep reiterating with clinical staff the need to practice correctly, and “making it habitual”. Where praise was given for “good” performance, for example, an exemplary ward audit result, this was used as a strategy to stimulate clinical staff to maintain their standards. In this way, positive feedback was an instinctual action used by different intermediaries.

6.7.6 Promoting good habitual behaviours

In this study, policy discourse and the provision of feedback were noted to be aimed towards enhancing habitual behaviours amongst clinical staff. This is a novel finding which elaborates on the current evidence which links reinforcement and promoting best practice (Walter et al, 2006). Little evidence currently exists in the literature to demonstrate how people form habitual behaviours, and the impact of reinforcement and rewards (Lally et al, 2010; Nilsen et al, 2012), and this finding was not noted in the review. However, Walter et al (2006) suggest that certain behaviours can be sustained when the consequences can be seen to be positive. Habits are defined as; “automatic responses to contextual cues” (Lally et al, 2010: 484). Automaticity is achieved when individuals display the following behaviours, described as efficiency, lack of awareness, unintentionality, and uncontrollability (Bargh, 1994). However, automaticity is more likely to occur where behaviours are deemed simple (Lally et al, 2010). The other problem with habit formation is the recognition that they are less likely to be performed in the real world where opportunities are missed to carry out

the behaviour (Lally et al, 2010). This resonates with infection control practice where it is acknowledged that people do not always behave according to the evidence.

Habit-formation is linked to contextual features (Lally et al 2010), and “good habits” require those same contextual cues to be present continually (Nilsen et al, 2012:2). This is described as “outsourcing” control of behaviour to cues (Nilsen et al, 2012). For this study, the cue lies with the policy discourse which would be familiar to clinical staff and the intermediaries’ provision of feedback. However, it is argued that the findings of this study have uncovered the significance of other contextual cues that revolve around the proximity and presence of intermediaries in clinical practice. Further exploration to understand the influence of these contextual conditions would shed light on the potential impact of the intermediary to help develop good habit formation by clinical staff, and how to shift behaviour where habits are entrenched and need to be changed.

6.8 CMO 4

6.8.1 Practice-based teaching

In CMO 4, the provision of practice-based teaching for clinical staff highlighted ways in which clinical staff were supported by the intermediary programmes. Although mandatory infection control education and training for clinical staff were provided by the organizations, the study found that clinically based approaches to the provision of education and training were equally important for clinical staff, not only to maintain their knowledge and keep updated concerning infection control issues, but to enable them to manage real situations as they occurred. Adjunct to mandatory training programmes, practice based teaching emerged as an important condition, and often focused on the problem clinical staff were concerned with at the time. The manner of delivery of practice-based teaching resonated with the literature around opinion leadership discussed in chapter one, whereby informal and formal approaches have been observed (Doumit et al, 2007) and theories of social learning, which emerged in the realist review. However the emphasis on practice-based education was more specific than the evidence extracted for the review which merely highlighted the potential impact of education provision.

Intermediaries were instrumental in making teaching relevant to different clinical areas, and participants' preference for this approach reflects the findings of previous studies, which have also concluded that teaching is more beneficial when conducted in the real life situations of clinical practice (Ching & Seto, 1990; Wisniewski et al, 2007). The presence and proximity of intermediaries in clinical areas enabled them to identify clinical staff needs in terms of education provision, and their skills and abilities enabled them to deliver adaptable models of education, findings which reflect the problem-based focus of andragogy in adult learning theories (Gilmore 2011). In social learning theories, the problems of collective powerlessness in adult learning can be overcome by promoting self-empowerment (Bahn, 2001), which links to the earlier disclosures around self-surveillance and self-monitoring, showing the inter-dependence between the CMOs in this study.

The findings warrant consideration to the issue of situated learning, and ensuring that education is placed in the right context. The data from both case studies showed that, where learning took place in the clinical areas, and where intermediaries made efforts to ensure topics were timely and relevant for clinical staff, this was perceived to be more meaningful for individuals, and triggered them to be reminded of the sense of relevance to their own practice. In turn this resulted in heightened awareness of infection control across clinical areas. Whilst capacity issues forced the provision of learning in the workplace, to an extent, participants reported how the clinical model of teaching worked better for them. The findings allude to the need to develop better systems in which practice-based learning can be facilitated by intermediaries so that staff can be cognisant of the clinical environment. For infection control, this has implications to focus individuals' attention on the gravity of the issues, and enabled people to learn in practice which is; "inclusive of the material resources within it, the formal requirements, the culture, procedures, practises and standards of particular clinical areas, the expectations and interactions of all the people who are in it, as well as the personal characteristics of individuals who are part of this environment" (Stuart, 2003:186).

6.9 Summary of findings

The study's findings have uncovered four demi-regularities which demonstrate ways in which the intermediary can be successful to promote best practice in infection

control. The findings of this study show that the success of intermediary interventions is often dependant on their proximity and intensity of physical presence in clinical areas. In the first demi-regularity, presence and watching over was found not only to monitor practice, but also to have the potential to prompt individuals to be more attentive to their own practice, echoing the theories of self-surveillance or self-monitoring. The first demi-regularity drew attention to the concept of human surveillance, and how different forms of surveillance should be explored for future practice. In the second demi-regularity, clinical staff believed they were being personally supported, through the approaches and styles intermediaries used to build relationships. Power was noted to be used where required and the relationships with modified or changed behaviours on the part of clinical staff were promoted within collegiate atmospheres, highlighting how better understanding of models of distributed leadership should be explored for promotion of best practice in healthcare. Fostering collegiality requires the support of managers, and this finding highlights that attention should be paid to how organisational and individual approaches to developing collegiate approaches in clinical areas should be developed.

In the third demi-regularity, the priority afforded to infection control by organisations and the language of policy was important, together with the use of positive and reinforcing ways to provide feedback. In turn, the relationship between policy discourse and provision of feedback were shown to link to promoting habitual patterns of behaviour, with the focus being on “good” habits. The discussion in this chapter has highlighted that little evidence currently exists to illuminate how habitual behaviours can be promoted, but the fact that the findings allude to the significance of this for the participants legitimises the call for further exploration. Finally, practice-based teaching and the efforts, on the part of intermediaries, to provide education that was timely and relevant for local needs, magnified how social learning theories can illuminate ways in which to provide meaningful learning for staff in order to promote best practice in clinical areas. Staff were better placed to be reminded of the sense of relevance to their own practice and promoted better awareness of infection control.

6.10 Revisiting the findings in relation to the initial programme theory

The initial programme theory drawn from the evidence extracted for the review (chapter three), consisted of broad statements to hypothesise what works and how. The study has emerged with findings that provide much more detailed description of the potential of intermediaries to promote best practice. Where intermediaries have the potential to promote and influence best practice in infection control through the provision of education, the study has found that practice-based teaching is what works successfully, especially where ensuring the relevance of teaching matches local needs and is provided in a timely manner to meet clinical staff requirements. Intermediaries are responsible for feeding back surveillance data, and implementing and monitoring guideline use. However, the study has found that the ways in which feedback is given provide the triggers for changing behaviours. In addition, the study's findings have highlighted that more attention should be given to the influence of policy discourse. The study found that the scope of influence of intermediaries is more likely to be successful where it is dependent on their proximity, enduring presence in clinical areas, and through the ways they use to build relationships. Other contextual factors that influence their role and function revolve around how intermediary roles are organised within organisations, and efforts to foster collegiality among clinical colleagues.

6.11 Developing the new programme theories

The final section of this chapter shows how the discussion of the findings contributed to the development of the study's new programme theories. Whilst the initial programme theories uncovered in the realist review were helpful to illuminate ideas of how intermediaries can contribute to promoting best practice, the case studies emerged with a range of demi-regularities which have the potential to guide practice and policy in future developments, for example, models of intermediary interventions and role development. The discussion chapter has considered the link between elements within the CMOs to underlying theory, to illuminate understanding and to seek ways in which the study's new findings can contribute to the body of evidence. The formation of the revised programme theories was an important step to consolidate the findings, as well as provide guidance for future

practice and research in different contexts. The development of the new programme theories integrates elements from the realist review with the new findings from the case studies to provide a set of revised programme theories for the study.

6.12 The study's final programme theories

<p>1. For intermediary programmes, clinical presence or being visible is an essential component for triggering success to promote best practice, and should be considered on a continuum that reflects mere presence on one side to being fully engaged with clinical activities on the other. Presence ensures that intermediaries are visible to others and can trigger desirable behaviour change. Presence and watching over practice promotes better adherence with best practice, and binds clinical staff and intermediaries together in a constructive manner, encouraging individuals to be more attentive to their own practice.</p>
<p>2. To promote behaviour change, understanding the nature of organisational strategy and policy, and the degree of pre-existing relationships between clinical colleagues in clinical areas can support intermediaries to be successful, especially where organisational support to provide multifaceted approaches to best practice is evident.</p>
<p>3. Intermediaries provide support and education for clinical staff through creative and practical approaches which are timely and made relevant to the local context. Situated learning is most effective to address individual needs in flexible approaches so that learning is more meaningful for clinical staff.</p>
<p>4. The contexts in which intermediary programmes flourish include organisational commitment to establishing clinical presence and proximity which is tailored to local need, and where there is evidence of investment to foster collegiate approaches among colleagues through styles and approaches to build relationships.</p>
<p>5. Clinically embedded approaches to developing intermediary programmes are important to promote professional collaboration and to emphasise the preventative nature of the roles. For the organisation, the ways in which intermediaries act can be described as nurturing and enforcing; advocating and providing support and education for clinical staff, whilst concurrently operating “under the radar” to ensure effective implementation of policy and guidance.</p>
<p>6. Meaningful attention to policy discourse can support intermediaries to tailor feedback effectively, and foster appropriate behaviours that promote best practice.</p>

Table 6.1: The study's final programme theories

6.13 Conclusion

The contents of this chapter have provided an extensive discussion of the important findings from this study, relating to the underlying theories which can help to

illuminate the significance of the study's findings for future practice and policy. The CMOs uncovered in this study have represented ways in which different intermediaries can be successful to promote best practice. Moreover, due to the influence of realist evaluation, the findings have also showed the essential contextual conditions which contributed to the desired outcomes. This chapter has served to highlight what can be learnt from exploring the theories which underpin different CMO configurations, as well as highlight the benefits of using the realist approach to ensure that theory is always matched with the reality of practice.

Tilley (1996) explains that the worth of evaluations is greatly enhanced if the contexts and mechanisms are understood. As Tilley states (1996: 48); "if this is fully understood then both internal and external validity standards will have been achieved". The study has illuminated different findings about ways in which different intermediaries can promote best practice, and this chapter has elaborated on the meaning of the findings, to seek areas where identified gaps in the current evidence can be explored. The findings build upon the initial programme theory which the review uncovered. The development of the revised programme theories represent the main findings of the study, and provide guidance for future work to explore the potential of different intermediaries to promote best practice. Chapter seven will provide the conclusion to this thesis, and summarises the new knowledge generated by the study. In addition, a reflexive account of the process of undertaking this study will be presented. The conclusion chapter will provide a summary of the recommendations from the study's findings for policy, practice and future research.

CHAPTER 7:

Conclusions and recommendations

7.1 Introduction

This thesis has provided a report of a theory driven study, which has uncovered new knowledge about the role of the intermediary, and their potential to promote best practice. The findings, reported in chapter six, have uncovered a number of demi-regularities which illuminate, in ways which have not previously been considered, the impact of different intermediaries under specific contextual conditions. This chapter reflects on the process of undertaking this research, and considers the recommendations from the findings of this study for practice, policy and research. For the realist evaluator, the quest to uncover CMO theories to understand what constitutes success for complex programmes never reaches a final conclusion (Pawson & Tilley, 1997). However, for the purposes of this study, it was necessary to arrive at a “temporary resting place in the process of specification” (Pawson & Tilley, 1997: 126). The theoretical underpinnings of the study will be reviewed in this chapter to report on the utility of realist evaluation to meet the study’s aims and objectives. In true realist fashion, cumulation of realist evaluations is discussed briefly. The potential contribution of this study to the realist evaluation body of evidence is considered. The revised programme theories which emerged from the findings are revisited to recommend how it can be developed and used for future practice and research. Reflections on the use of qualitative research and case study design are provided.

The limitations of the study are acknowledged and discussed, in order to provide a balanced view of the study as a whole, and also to consider what has been learnt from the process for future studies. Finally, a reflexive account of the process of being a PhD student and developing this thesis is provided. The reflexive account is intended to show the ways in which the researcher’s own role has evolved and developed throughout the period of undertaking this study. The account will explore the significance of the researcher through the PhD process. To fit with this section,

reflective comments and the reflexive account will use the first person. Final conclusive remarks bring the thesis to a close.

7.2 Revisiting the study's aims and objectives

The aim of the study was to evaluate the role of intermediaries in promoting best practice in infection prevention and control; to determine what works, for whom, how, in what respects, and in which circumstances. It is recognised that fundamental practice in infection control are difficult to implement (Cullen & Adams, 2012). This study was designed to elicit information which illuminates how people in intermediary roles can contribute to the process. The initial proposal for the study evolved around the need to explore the concept of the intermediary, using the realist approach to collect explanatory evidence, and to elicit their contribution to promoting best practice. Whilst the healthcare literature base acknowledged the potential contribution of a range of different individuals in intermediary roles, there was a paucity of evidence that had considered the potential impact of intermediaries in promoting best practice in health services. The study was sited within the domain of infection control, which, as outlined in the rationale for the study in chapter one, is extremely complex, and the behaviour of individuals, and gaps in evidence based practice, remain poorly understood.

In considering the methodological approach that would best suit the aims and objectives of the study, I was cognisant of the growing body of evidence that argues for better understanding of contextual conditions in evidence based practice. In this way, it was important for the study to contribute to better understanding of the elements which exist within the reality of practice which can be further developed to support the promotion of best practice.

7.3 Realist evaluation as the study's methodological approach

This study's contribution to the realist evaluation body of evidence was provided through conducting an iterative realist review, and two mixed methods case studies designed to develop and then test and refine CMO propositions (chapters four and five). Throughout the study, realist evaluation provided the methodological framework to ensure that the focus of the study was always around unearthing context, mechanism and outcome strands that would become theories to inform

practice and policy of the ways in which different intermediaries can be most effective in promoting best practice. As such, the realist perspective was useful to maintain focus, and as it formed the basis for the design of the study, the findings emerged from the reality of practice from the perspective of the participants. In understanding the philosophical underpinnings of realist evaluation, it was important to maintain the ethos of critical realism throughout the study's duration, and search for generative mechanisms which are not always visible. Realism releases; "the possibility of understanding the multiple mechanisms at play and acknowledges that several explanations may exist" (Hodgkinson & Starkey, 2012: 607). Employing the realist approach supported the development of better knowledge about the specific mechanisms around different intermediary interventions which have the potential to contribute to successful outcomes. This enabled me to conduct the study with an open mind, being mindful that, whilst the new findings were insightful, they could not provide all the answers. In other words, critical realism offers; "one possible perspective upon which to base reflexive and critical analysis, but it does not point to the simplistic conclusions of a one-best explanation" (Hodgkinson & Starkey, 2012: 607).

7.4 Methodological issues

It is important to reflect here on methodological issues which emerged as a result of choosing realist evaluation. Understanding the meaning of context, mechanisms, and outcomes in realist parlance, as "features of experiments and projects" (Tilley, 1996: 44), was initially challenging and required an in-depth analysis of the terms, both in terms of reading and discussion. Moreover, understanding the meaning of the terms for the study required a deep level of study and debate. In the realist review, I found it initially difficult to grasp the initial mid-range theories, as the evidence which presented itself to support the ways in which different intermediaries promote best practice was diverse, and often focused on personal characteristics and attributes, as opposed to mechanisms. In a similar manner, focusing on contextual conditions was difficult, based on the complexities within the domain of infection prevention and control, and the tensions between policy, evidence and practice. It was also important to consider how the meaning of context in realist parlance fit with the conceptions of context for evidence based practice, a challenge which was addressed

for an international event through a poster and verbal presentation (see Page 19). It has already been suggested that understanding the potential of interventions to promote best practice in infection control is complex, whereby, often, multifactorial interventions are used. Once the constituents of context (based on the work of Greenhalgh et al, 2004b) were examined, this was helpful to consider potentially significant contextual factors and conditions.

What constitutes mechanisms was a particular issue that required extensive study and discussion, as illustrated in the discussion in chapter two (section 2.9.1). The challenge of understanding mechanisms was also articulated in a presentation for an international event (see page 19). In realist evaluation studies, Byng et al (2005) refer to the dilemma of to how far to probe into different layers of reality to seek the generative mechanisms (Marchal et al, 2012). This is an issue which lacks general guidance as to its management. In this study, addressing the depth of evidence relied on my developing researcher skills, use of audit trail, data management, the supervision process, and using sources of support to maintain reliability. The availability of time and resources were also influential in my decisions on the boundaries of data collection. However, it is a valid concern, and future guidance on how to manage this issue in the future would be useful for evaluators. In the data collection and analysis processes, it was important to maximise integration of contexts, mechanisms, and outcomes. In reality, little guidance exists for researchers to show ways in which this can be achieved, and Pawson (2013) cautions against listing findings, as opposed to finding CMO threads which show a degree of proposition building functions. Whilst a small amount of literature has provided guidance on how to integrate Cs, Ms and Os in data analysis, prescriptive guidance may not always be relevant for different studies. On reflection, the approaches chosen for this study, which used a variety of different guidance sources by realist evaluators, proved to be the best fit for the aims and objectives. Additionally, making use of different data sources (interviews, observations and documentation review) were useful to confirm the CMOs as they were developed.

In sum, using realist evaluation as the methodological approach was an appropriate choice, and insightful for this study, and whilst it was challenging, the rewards gained were immense, as it provided new insights about mechanisms of action for

intermediaries not previously articulated. The development of context-mechanism-outcome theories drawn from the reality of healthcare practice ensured that practice remained at the forefront of the study, and the data collected truly represented the 'live' situation of practice. In essence, the realist evaluation approach was one way in which to 'go down into the swamp where practitioners go about their daily work' (Freshwater & Rolfe, 2001: 527).

7.5 Replication

"Replication evaluation, as construed here, should thus be of paramount interest to social scientists. It offers a way of checking conjectures, and corroborating theories" (Tilley, 1996: 49). Replication in realist terms means the extent to which context-mechanism-outcome findings are found to echo across realist cycles. Pawson and Tilley (1997), however, concede that exact replication is impossible. Tilley (1996) refers to three ways in which replication can be interpreted. A strict approach is unachievable in the social and natural world (Tilley, 1996), possibly because the intervention and the context are not always explored in depth (Kazi, 2003). Conversely, the relativist approach lack real guidance, and is more focused on exploring participants' perceptions within specific situations (Tilley, 1996: Kazi, 2003). The realist approach differs from the empirical and relativist approaches in its emphasis on understanding the 'interdependence' between context and mechanism (Tilley, 1996), a factor which was more suited to the aims of this study. However, Tilley (1996) concedes that relativist elements are unavoidable even when findings are viewed through the realist lens. For example, projects are examined in open systems which are uncontrollable, so that there is always an element of doubt (Tilley, 1996). In this way, it could be argued that interpretations of context and understanding where context is placed in the open world render nothing certain. However, according to Tilley (1996:44), 'the trick is to recognize and to reproduce those salient features of the context which are needed for the mechanisms to be activated.' For future evaluations, these are the contextual conditions that can be looked for in different settings, and their implications considered in terms of triggering similar or different mechanisms.

Replication is not easy, but essential, according to Tilley (1996), who states that, 'if subjected to empirical test, replications in this scientific realist sense promise more

refined/corrected conjectures about what can work in what conditions' (Tilley, 1996: 49). Therefore, for this study, the discussion chapter focused primarily on the context-mechanism-outcome configurations which emerged as most keenly matching the criteria for replication, so that others can consider their future applicability in different settings.

7.6 Stakeholder engagement

The use of realist evaluation as a methodological approach ensured that stakeholder involvement was kindled right from the start of the study, to help generate the right ideas about the aims and objectives of the study, and to allow stakeholders to voice their views. Stakeholder meetings convened to help develop the initial programme theories were illuminative and generated questions which were productive to the realist review process. The stakeholder meetings which were convened to feedback the main findings were also useful in that they affirmed the 'fit' of the theories to their own practice situations, and demonstrated their interest in the ideas that had been generated from the study. As Pawson and Tilley argue (1997: 164); "the true test of data is whether they capture correctly those aspects of the subject's understanding which are relevant to the researcher's theory". Despite stakeholder involvement being an integral component of the realist approach, there were some challenges encountered in developing engagement with stakeholders. For the initial stakeholder groups in the realist review (chapter three), it was important to choose individuals who could contribute to the process. Full details of the process of identifying stakeholders are often lacking in the reporting of realist evaluation studies, and there appears to be diversity in the ways realist evaluators report embedding the stakeholder's perspective into the process. For this study, identifying stakeholders with specific responsibilities for infection control was the principle objective. However, it is important to be cognisant that stakeholders may have differing views and use of reason. The guidance provided by Pawson and Tilley (2004: 22) proved to be useful advice throughout the process of engagement, whereby; "stakeholders are treated as fallible experts whose understanding needs to be formalised and tested".

7.7 Choosing the case study design

In chapter four, the rationale for choosing the case study design and the methods for data collection was provided. Chapter four provided a critique of the case study design, and considered its appropriateness with the realist evaluation methodological approach. However, it is recognised that this remains a confounding issue with several authors using the terms method, methodology, and design synonymously to describe the case study (Jones & Lyons, 2004). On reflection, however, this study's use of the case study resembles more closely the interpretation of design; "to ensure that the evidence obtained enables us to answer the initial question as unambiguously as possible" (De Vaus, 2001: 9). Transparency has been achieved through the thesis providing a detailed chronicle of the methodological approach chosen for this study, the data collection process, data analysis, and the relationship between the study's design and its "philosophical location" (Jones & Lyons, 2004: 72) .

7.8 Limitations

The previous reflections on the choice of the realist evaluation approach, and case study design for the study, have highlighted the importance of being cognisant of "real world constraints" (Robson, 1993: 24). Whilst, ideally, conducting more than two case studies could have provided further details to the findings uncovered in this study, or unearthed different findings, the issue of time and resources had to be considered. In an ideal world, such constraints should not impinge on researchers' decisions around how research studies are planned and executed. However, practical issues influence much of the researcher's decision-making (Ellis, 2003). This was true of the realist review as well as the data collection stages. The realist review is notorious for being complex, as it does not restrict itself to criteria that symbolises the traditional systematic review. Rather, the process is supported by the principles of being open to different sources of information, and being pragmatic. For the neophyte reviewer, this can feel daunting, where an array of different theories could be equally applicable in demonstrating how intermediaries operate, and where context could be interpreted in so many different ways. However, a growing number of published reviews and protocols illuminate the recognition being increasingly attached to this approach, and were useful as guidance for this study. In essence, whilst the case studies generated a small sample of respondents, they addressed the

principal aim which was to enquire into what could be learnt about intermediary programmes for infection prevention and control.

However, in the light of the broader purposes of cumulation, future studies can focus more energy on the specific elements of the CMO theories uncovered here, to seek confirmation that they re-emerge in different contexts, or to note how different mechanisms emerge when other contextual conditions are more prominent. In this way, a portfolio of different CMOs could provide the foundation for better understanding of what works. For the complex healthcare arena, where challenges exist in changing behaviours and promote best practice, this portfolio would be extremely valuable.

Interviews were the main data collection method used in the case studies. Whilst it is recognised that face to face interviews have the potential to be affected through social desirability of the participants, or interviewer bias (Polit & Beck, 2004), the participants were considered to be honest in their responses, and reflected the reality of their day to day practice in the discussions. During introductions, it was established that the researcher was not a specialist practitioner in infection prevention and control, which appeared to relax some participants, thus aiding the success of the interview process. To address the issue of reliance on self-reporting, additional data, in the form of observations and documentation review supplemented the interview data.

The study's findings need to be placed in context. Whilst it is not possible to draw generalizations from one study, and, as previously discussed, this was not the aim, the findings provided a degree of insight into particular contextual conditions which have the potential to trigger successful intermediary mechanisms, and lead to outcomes. The question that remains is whether each context- mechanism dyad were successful in their own right, or whether their potential impact on outcomes of change behaviour or practice were the combined result with the other findings uncovered here. To explore this, future studies should focus on the CMO theories found in this study, and explore if they resonate in different contexts, including the use of different strategies for infection prevention and control. Further, the study has highlighted how exploration of key contextual factors is required, before it can be understood how they impact on significant mechanisms.

7.9 Recommendations for research, policy and practice

Drawing conclusions about the study's contributions to new knowledge are based on assessment of the extent of the findings to provide insight and recommendations for policy, practice and research including scholarship and co-production. Lipscomb (2012: 112) argues that insight is a; "woolly modal term and the status of 'knowledge' is no less problematic". However, the following section dissects the findings to show the contribution of the study for the three key areas of enquiry.

7.9.1 Recommendations for research, scholarship and co-production

For research, engaged scholarship and co-production, what this study adds is twofold. Firstly, whilst research impact is normally associated with academic use through reporting, referencing or citation, it is argued that other ways can be used to show impact, including; "collecting the subjective views of a relevant audience or observing the objective behaviour of members of that audience" (LSE Public Policy Group, 2011:11). For this study, the novel use of realist evaluation has highlighted the potential contribution of this methodology to advancing new knowledge in healthcare which can demonstrate the contribution of intermediaries. Realist evaluation is being increasingly recognised for its value in developing better understanding of interventions situated within complex social situations. For this study, its particular contribution was in guiding the focus on mechanisms, so that interaction between context and the triggers for behaviour or practice change were revealed.

Further, utilising the realist evaluation approach incorporated the views of participants and stakeholders, emphasising that theory driven studies need to represent the theories of the people who use them. This is an important factor which warrants attention for future research projects through, for example, establishing project management teams which include stakeholders with a vested interest who can contribute and inform the development of CMOs. For research findings to resonate for the individuals who will use them, those individuals; "need to competently recognise how, if at all, qualitative reports describe similar or analogous situations to those in which they are located if those reports are to function as evidence" (Lipsomb, 2012: 116). In other words, being able to make sense of

research findings in the context of their own practice will make the findings more credible to the end users. This is an important issue for the healthcare domain, where the emphasis is increasingly on the importance of engaging practitioners in the process of research. Realist evaluation principles, with the emphasis on stakeholder involvement and tools such as teacher-learner interviewing, is ideally suited to developing the “folk wisdom” of practitioners (Pawson & Tilley, 1997: 107), and provide a platform to develop meaningful research for the healthcare domain in the future.

Secondly, the study’s methodological approach focused the enquiry on eliciting, for different intermediary programmes, the mechanisms and contextual conditions that could demonstrate change outcomes. Whilst the concept of the intermediary has been explored in existing literature, little attention has previously been applied to seeking the exact mechanisms and contextual conditions which can contribute to success or failure. Where studies have attempted to establish links between different intermediaries and their impact on promoting best practice, findings have been inconclusive (Markam, 1998), or scant (Jack et al, 2004; Rawlings, 2007; Ploeg et al, 2010). For example, the role of the facilitator has not been well-defined in the literature (Harvey et al, 2002; Stetler et al, 2006). This study has uncovered ways in which different intermediaries were able to trigger responses from individuals which had the potential to promote best practice. However, much more needs to be understood about ways in which intermediaries operate successfully. This study’s findings can illuminate the potential contribution of the intermediary for other disciplines, so that future research studies can benefit from using this methodological approach. Through the lens of the theories which have emerged in this study to illuminate ways in which intermediaries can promote best practice, further research can be used to further test and refine these theories. In particular, the theories which populate the conceptual framework offer a basis for future research, to explore their contribution in different contexts in health services.

Future evaluations into the contribution of different intermediaries could consider the use of alternative methods. Intervention studies, using pre and post data collection methods could measure the impact of the context-mechanism dyads uncovered in this study, using both behavioural and performance change outcome measures.

Pawson and Tilley (1997: 158) are open-minded about the use of different methods to collect data in realist evaluations, stating that choice of data; “should offer something more than weight of evidence but also should invite a sense of explanatory completeness, synthesis or closure”.

Lipscomb (2012: 113) acknowledges that; “the logic of linkage between qualitative research findings, insight/knowledge, understanding, belief formation, and action is complex and problematic”. In this study, the purpose was not to elicit findings that could be deemed generalizable. Indeed, such a statement is not compatible with the realist approach as discussed in the methodology chapter (chapter two). However, qualitative research methods need to be used if; “progress is to be achieved in disciplines other than those which may rely on laboratory conditions” (Freshwater & Rolfe, 2001: 527). In this way, the process of this study contributes to the development and recognition of the qualitative paradigm within the healthcare arena. Lipscomb (2012) points to the potential of qualitative research findings to be of benefit to clinicians, only if they have been gathered over a period of time, and constitute a range of evidence. In other words, there cannot be expectation of individual belief change as a result of a single study, but individuals may; “be able to reach judgements about the goodness of otherwise of the constituent parts of the wider beliefs” (Lipsomb, 2012: 113).

In sum, the recommendations for future research suggest; studies should examine how different intermediaries operating in different contexts use similar or different mechanisms to those uncovered in this study, and concentrate on better understanding of successful components. Future studies should be focused on explaining the minutiae of particular intermediary mechanisms and understand the conditions which trigger or hinder their success. Future studies should include project management groups to include stakeholder representation to ensure that the impact of the project is focused on the aims and objectives of project users and collaborators, and contribute to the generation of findings which will inform the healthcare community of ways in which the potential of different intermediaries can be developed and promoted for future practice.

7.9.2 Recommendations for policy

What this study adds to policy are recommendations about how different intermediaries could be developed for future practice. The revised programme theories offer a basis to guide development of new roles and initiatives, for both infection control policy and for broader areas of healthcare practice. Despite the policy adoption of the zero tolerance approach resulting in the generation of a range of interventions for embedding evidence based infection control practice, this study's findings support the recognition that addressing healthcare staff compliance through behaviour change is also essential (Pittet, 2004). Whilst infection prevention and control policy documents already allude to the importance of intermediary programmes and roles, evidence of their distinct contribution has often been lacking. For example, the RCN (2012b) highlights that only some documented evidence of local improvements in infection control have been reported. An evaluation of the NHS Education for Scotland cleanliness champion initiative found that the impact of the programme in changing behaviours and practice mostly related to the champions' own behaviour and practices (Macduff et al, 2009). In general, policy guidance has generally focused on being aware of the potential of intermediaries to support and educate staff, as well as monitor standards of practice. For healthcare policy, the study has highlighted how distributed leadership, self-surveillance by healthcare practitioners and facilitating collegiality in clinical areas are currently under-explored, and shows how a range of different intermediary roles can be integrated with policy to contribute to promoting best practice in infection control. However, intermediaries require appropriate development in order to provide skilled facilitation. The review found limited reference to the training and education of different intermediaries for infection control, but this element within role development continues to be unexplored. Moreover, the findings highlight that future policy should develop visible roles that provide distributed leadership in infection control, and explore the use of peer level intermediaries in addition to the established specialist or managerial roles.

Another area of interest for the infection control domain lies around policy discourse. In the findings chapter, ways in which policy was interpreted in practice was perceived to be an essential contextual condition to promoting 'good' habitual

behaviours, but also represented the lack of clarity which sometimes exists around terminology in healthcare. This finding highlights the importance of understanding how terminology within infection control policy is interpreted by clinical staff, and alludes to the potential of using policy discourse as a tool to support different interventions. In particular, future studies should focus on ensuring better insight into how the concept of zero tolerance, which underpins organizational strategy, is operationalized in practice

7.9.3 Recommendations for practice

The findings from this study should be considered in terms of their appropriateness for all areas of healthcare where general efforts are focused on promoting best practice. There is potential to develop the mechanisms of watching over, being visible, giving positive reinforcement, relationship-building, and providing practice-based teaching in different settings. However, the mechanisms cannot be developed unless the underlying contextual conditions are also taken into account. The presence of intermediaries, the extent of their proximity to practice, and how individuals perceive and understand policy discourse are essential contextual conditions. From this study, a toolbox of resources can be developed for practice, which can be evaluated and adapted for transferability to other domains within healthcare.

In health services, different intermediaries are well-positioned to contribute to embedding best practice. In infection control, it is established that a small number of 'satellite' and clinical champion roles have been developed in recognition of their potential contribution with job descriptions including responsibilities for monitoring practice, maintaining standards, and the provision of education and support for clinical staff. However, this study has uncovered that other individuals act in intermediary capacity in efforts to promote best practice. In the future, emphasis should be shifted away from roles, to more focused attempts to understand and develop mechanisms which have the capacity to bring about behaviour or practice change. For example, the study adds a new perspective based on the theory of surveillance and watching over. As opposed to being associated with punitive measures, surveillance and watching over in this study reflected the 'pastoral' activities undertaken by different intermediaries which led to clinical staff being more attentive to their own practice, in a form of self-surveillance. These findings

can be used to develop and evaluate peer level intermediary models as well as consider their implications for more traditional intermediary roles. For future practice, training and education for different intermediaries should focus on how to realise the potential of the mechanisms uncovered in this study, as well as focusing more intently on human factors which can protect patients from the risk of HCAs (Storr et al, 2013). Further, models of authentic leadership focus on the importance of self-awareness, which should be incorporated into intermediary training or educational programmes.

For practice, the study's findings provide insight into different contextual conditions which can be developed in order to better trigger the success of mechanisms (Wong et al, 2013). Understanding the potential impact of proximity and frequency of presence can lead to different approaches that can be explored for clinical practice. In order to maximise the potential of different intermediaries, managers could consider investing in a range of different intermediary roles placed as near to practice as is feasible. For practice, this study has shown how traditional interpretations of context, for example, geographical, are not always useful when it comes to evaluating best practice interventions. Instead, a pragmatic approach to understanding context can result in the discovery of specific, 'local' factors which have the potential to influence the success of ways to promote best practice. The revised programme theories developed from this study provides a basis for developing different models which make sense for the real world of healthcare practice.

7.10 Reflexivity

Reflexivity is described as uninterrupted reflection on the part of the researcher on 'their own values, preconceptions, behaviour or presence and those of the respondents, which can affect the interpretation of responses' (Parahoo, 2006: 327). Reflexivity is the way researchers 'incorporate their social self into the research project' (Freshwater & Rolfe, 2001: 534). Reflexivity is an essential component of justifying the study's rigour, particularly within the realms of qualitative research (Woods, 2003). However, it is a concept that lacks in guidance for researchers and is poorly explained in the literature (Carolan, 2003). Put simply, reflexivity aids the researcher to consider their own influence on data collection, through analysing their

own position (Carolan, 2003). Reflexivity should be considered throughout the duration of any study (Hand, 2003). As suggested by Hand, a conscious effort was made to consider aspects of reflexivity throughout the study, a challenging issue considering the length and brevity of any PhD study. However, what became increasingly useful were handwritten notes kept in notebook format with ideas, plans and processes being recorded and dated. In order to express the reflexive processes that were undertaken during the study's duration, the use of the first person will be made in this section.

7.10.1 My nursing background

One way of developing a reflexive approach was to consider how my own experiences could influence the process of the study. Throughout the study, I was aware how my own professional background could influence the process. As expressed in the forward to this thesis, I am a qualified registered nurse who has experienced a lengthy period of twenty years in clinical practice, before my career took a turn towards the academic setting. From my experiences, I was always cognisant of the problems healthcare associated infections present for patients, their families and carers. I could recollect several scenarios, whereby I had been involved in the care of patients with HCAs, and I could remember being aware of the impact this had on them and their significant others. I could also recall interactions with clinical colleagues over the period of time spent in clinical practice, whereby different attitudes and behaviours towards infection prevention and control were made explicit through dialogue or collaborative working. Additionally, my current lecturing post with pre-registration nursing teaching responsibilities have led me to consider what influences students when in clinical practice. Whilst they undergo clinical placements armed with the education to provide evidence base practice for infection prevention and control, the literature highlights the influence of mentors and clinical staff on the students' practice (Ward, 2010). In reflexive terms, bias is better described as 'interest' (Stenhouse, 1981) or 'prejudice' (Gadamer, 1976), but my own experiences and perceptions were nonetheless issues I needed to be cognisant of throughout the study's duration.

7.10.2 Reflexivity and the realist evaluation approach

Note taking and keeping a diary enabled me to consider how my knowledge was developing throughout the study's duration. I was introduced to RE at the outset of commencing the PhD process, and had no prior knowledge or experience of this approach. Initially, I found it difficult to link my ideas for the study to this novel approach and to shift my thinking. However, as the study developed and I became more acquainted with studies where the authors had used realist evaluation for the benefit of their enquiries, I became more familiar with some of the concepts, and through the reflections of other authors, developed an appreciation for the potential benefits, and gained better understanding of the complexities of this approach. This progressed to enquire into the utility of the realist ethos, so that I could make better links to elements of my own study. I then began to critique published studies which purported to use the principles of realist evaluation. Carolan (2003:11) explains that, through reflexivity, these efforts address the concerns of researchers to be 'doing the research job properly'. Finally, planning and submitting an academic paper for publication (Williams et al, 2013), which included an account of using the principles of realist evaluation, was a helpful part of my development in becoming more acquainted with realist evaluation (Appendix 7.1).

7.10.3 Reflexivity and data collection

Choosing the case study design for data collection was a process that involved reading around different methods to consider the appropriateness of each. It was important, during this process, to consider my own values, and how they could potentially impact on the data collection methods and findings (Carolan, 2003). However, I believe my own clinical experiences were useful for data collection periods, as I had insight, based on my own experiences, of participants' perspectives and was familiar with terminology, ways of working and the constraints of clinical practice. During data collection periods, I had to think about the impact I was having on the participants if they knew or assumed I was from the same professional background as them (Lathlean, 2010). Not being a specialist in infection prevention and control, I found that my generalist background was helpful, particularly when it came to explaining the aims of the non-participant observational periods. Choosing case studies allowed study participants to 'tell their stories' (Pellatt, 2003: 30). An

audit trail was important, and was maintained through using various diaries, note taking, and logging the data analysis process. The use of verbatim quotations (Topping, 2010) provided an 'indication of clarity of links between data, interpretation and conclusion' (Corden & Sainsbury, 2006: 97).

Reflecting on my clinical background and experiences and how this could potentially influence data interpretation, was also important for the reflexive process (Lathlean, 2010). It was essential that I viewed the data as it related to the participants, to remain true to the findings, and consider that 'meaning-in-context refers to the special meaning of data in the holistic contexts of the informants' (Casey & Houghton, 2003: 49). The supervisory relationship was an important part of this to clarify and validate the meaning of data. Stakeholder feedback was also invaluable to clarify meanings and interpretations, and ensure that the findings were consistent with the participants' views. In the literature, there is a call to increasingly include participants in research report processes (Corden & Sainsbury, 2006: 109).

Attempting to define the meaning of reflexivity is not easy, but it can be interpreted, according to Freshwater and Rolfe (2001) as turning either reflection, or practice back on itself. Both interpretations imply that this process leads to action. In contrast to reflection, reflexivity is about immediacy, and asking questions whilst in the midst of the process, to consider if and how action change is required there and then (Freshwater & Rolfe, 2001). To illustrate the reflexive dialogues that I had with myself during the course of undertaking this study, I turn to the work of De Bono (2000), whose seminal work has illuminated the benefits of parallel thinking and different ways of thinking.

De Bono (2000) used the metaphor of six thinking hats to support thinking in more analytical ways. The white hat symbolises objective thinking and collecting of information, and reflects my thinking in the early part of the study. In this type of thinking, I was conscious of the background information that reflected the complexities of embedding infection prevention and control-evidence for policy and practice, as discussed in chapter one. The study was concerned with informing policy and practice about the potential of the intermediary to support this process. However, I was cognisant of the gaps in current knowledge where the intermediary and

implementation research was concerned. Further, I needed to choose an appropriate methodological approach which would illuminate the current literature.

Through the yellow hat thinking to seek the positives in my study and consider its value to practice, I was aware I needed to make explicit the potential of the intermediary, and explore what contributes to success. As part of the PhD process, I was also pursuing an area of enquiry to contribute to new knowledge, and to provide findings that would benefit policy-makers, managers, clinicians and ultimately, patients. My thinking along these lines led me to the choice of using realist evaluation as the favoured methodological approach.

The black hat implies caution and critical thinking. In this way, throughout the study's duration, I was constantly cognisant of my own abilities as a researcher. I was aware that using the realist evaluation approach would involve learning new approaches, for example, the teacher-learner interviewing technique. Thinking in this way raised awareness in me of my own limitations and consider ways as to how I could overcome these. In essence, research training formed part of my own development and encouraged reflexivity. Accessing the supervisory process and other supportive sources enabled potential problems to be overcome during challenging periods, for example, accessing sites and the ethical process.

The green hat represents creativity and energy. The findings from this study reflect the ideas propagated in healthcare literature to encourage fostering creative processes. According to Blakeney et al (2009), innovation which is focused on the reality of practice must consider the context and the experiences of all stakeholders. My thinking in this way were always evolving through the study's duration, seeking new ideas and always cognisant of the requirement to emerge with contributions to the current evidence base. This hat mostly represents my thinking during the data analysis and discussion of findings stages, where emerging ideas, and the development of CMO theories challenged me to consider the difference in these findings from what was previously known.

The penultimate hat, the blue hat represents the overview of the process. This thinking was more concentrated towards the final stages of the study and thesis development. Thinking in this way was reflective, in contemplating the main

achievements of the study. By further dissemination through publications and conference presentations, the findings will illuminate future developments around the concept of the intermediary within healthcare services.

Finally, the red hat represents thinking whereby emotions are considered but also legitimised. This thinking was ongoing throughout the study's duration. At certain times, I was aware of my gut feelings on different issues, and how my perspective as a PhD student was always evolving. Reflexivity represents a stepping away from indulgent thinking or introversion, described as 'navel gazing' (Freshwater & Rolfe, 2001: 530), therefore emotions were checked in this much more active process of reflexivity. Whilst the PhD process has often been described as a journey, implying a 'long and winding road, a road that is full of road works and appears to have been mainly uphill, against gale force winds' (Jack, 2003: 75), developing myself as a reflexive practitioner has enabled me to think of the process using the analogy of a trek, as opposed to a journey. A trek, originally an Afrikaans term, from the Dutch word *treck*, implies a long journey, but one which leads to a rewarding destination.

7.11 Reflecting on doing the study differently

If commencing this study again, I have reflected on what would be done differently. The realist evaluation methodological approach has been considered insightful for this study, and the case study design allowed for *closeness* to the study's participants, which may have not been possible through other means. However, the nature of the settings chosen (clinical areas/wards within NHS hospitals) meant that the focus of the work of the intermediaries was specifically around infection prevention and control in acute care. For future research, it may be useful to expand the boundaries so that the theories uncovered in this study can be tested in different contexts, for example, diverse healthcare settings where concepts such as proximity and presence might be more challenging. The findings have illuminated the potential of intermediaries to promote best practice in other areas of healthcare where reducing the gaps between evidence and practice continues to be priority. The findings also allude to the importance of the theories of what works, as opposed to the current focus on role and person. Thus, in a different context, future research should remain open-minded about what constitutes the successful intermediary in

any healthcare setting, focusing on the components of the intermediary as opposed to the person.

7.12 Conclusion

This study was situated in an important area of healthcare practice, and has provided a focused exploration of the concept of the intermediary. The aims and objectives of this study set at the outset were addressed through choosing realist evaluation as the study's methodological approach; to find out what works, in which contexts, and how different intermediaries can be successful to promote best practice. The study was placed within the domain of infection control, and has provided an in-depth review of the current evidence which underpins policy and practice. In chapter one, the current paucity of evidence to show the exact ways in which different intermediaries can be successful to promote best practice was highlighted. The realist review, undertaken to reflect the study's realist underpinnings, led to the development of an initial set of programme theories to hypothesise what should work. However, the review also highlighted the paucity of existing evidence to clearly show the ways in which different intermediaries can be successful to promote best practice. The first case study was designed to explore the programme theories in more depth, and emerged with a set of conjectured CMOs. In case two, the conjectured CMOs were tested and refined, to produce a more detailed set of refined CMO theories that showed a degree of resonance across the case studies. The main findings were discussed in depth, to consider their significance, and their relationship with other theoretical underpinnings. Four final demi-regularities emerged from the findings. A set of revised programme theories have been developed to guide future research and practice initiatives. Recommendations for policy, practice and research have been presented.

In essence, using realist evaluation as the methodological approach for this study has been meaningful in disclosing illuminative elements that help to explain the potential of different intermediaries for promoting best practice, but only if triggered under the right contextual conditions. The findings of this study highlight a number of key themes to show how intermediaries can contribute to promoting best practice. The contextual conditions which showed most impact have been conceptualised as; presence, proximity, visibility, power, the language of policy, feedback, collegiality,

and practice-based teaching. The study has illuminated the relationship of the conditions with the mechanisms. The outcomes from the context-mechanism dyads have provided ways of promoting best practice for infection control, through promotion of better adherence to practice, promotion of self-monitoring, better compliance and motivation to act according to policy and standards, collegiality, promotion of "good" habits and better awareness of infection control practice. Recommendations for future research, policy and practice have been presented.

Better understanding of ways in which different intermediaries promote best practice should be the focus of future enquiry. In healthcare, understanding interventions which show potential to trigger behaviour or practice change, and contribute to quality and safety for patients, is an evolving and essential area of research. Further research into this area will help to develop clearer theory about different models that can have an impact in changing behaviours or practice, and contribute to the promotion of best practice in health services.

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Appendices

Appendix 3.1 Stakeholder meeting PowerPoint Presentation



Improving infection control: the role of the intermediary in evidence-based practice



Infection control – the issues


- Nursing compliance rates with infection control - 30-70% (Reime *et al*, 2008)
- Lack of sound evidence examining interventions to improve infection control practice (Gould *et al*, 2007)
- Future research should focus on changing staff behaviours (Gould *et al*, 2007)

Steering group meeting aims

1. To inform the group of:
 - the aims of the study
 - the plan for the study
 - how results will be disseminated
2. Discuss ideas about different intermediary examples
3. To inform the group of the next steps

Example of how an intermediary might work in infection control

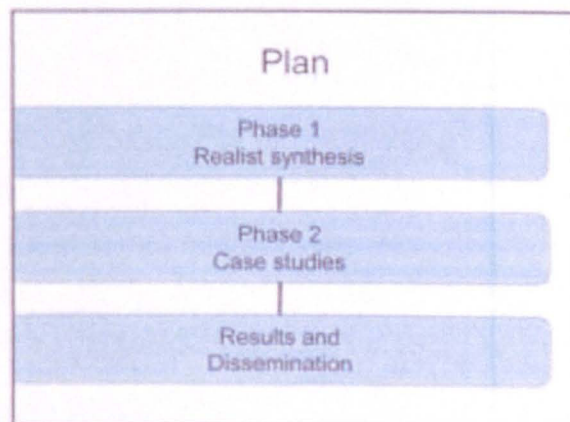
(typical champion characteristics in red)



- James, a staff nurse on a stroke unit ('internal to organisation, any level')
- Concern about management of how catheter drainage bags by patient and staff
- Seeks and finds information on catheter guidelines and a catheter care bundle used elsewhere ('enthusiasm')
- Compliance tool ('new idea')
- Meeting - involves ward manager, infection control team, ward staff ('influences others', 'transformational')
- Compliance tool put into practice - James involved in audit ('promotes programme')

The aims of the study

- To investigate the functions of intermediaries in infection control
- Identify a range of clinical roles that have an intermediary function in infection control
- To identify how the intermediary functions and how best to evaluate this
- To look at how intermediaries work in different contexts
- To consider how best to develop intermediaries' function in clinical practice, and to promote good examples in different settings and contexts



Stakeholder Group involvement throughout the study...

- Today's discussion –
- Review findings of realist review
- Identify case example for case study
- Feedback of results
- Dissemination

Appendix 3.2: Stakeholder Meeting Agenda

Intermediaries in infection control study

Stakeholders group meeting

2pm July 9th

Agenda

- **Welcome and introductions**
- **Aims and objectives of study**
- **Intermediaries -existing evidence and examples**
- **Infection control –interpersonal influences -the evidence**
- **Current phase –realist review**
- **Open up discussion –brainstorming**

Different roles in infection control in nursing –

What works? Examples of outcomes?

Which circumstances?

Where? (context)

How do the individuals work?

Examples?

Identify any gaps?

Summary and conclusions

Close

Appendix 3.3: Intermediary Roles and Functions

Intermediary roles and functions	Evidence
'Third party'	http://www.investorwords.com/2556/intermediary.html
'Middle man'	http://www.businessdictionary.com/definition/intermediary.html
Specialise in a particular area of work	http://www.businessdictionary.com/definition/intermediary.html
Internal to organisation, external to organisation Internal or external	Thompson et al, 2006 Rycroft Malone et al, 2002
Formal or informal Formal	KTP, 2008, Rycroft Malone et al, 2002
Any level	Thompson et al, 2006
Leader	Milner et al 2006
'Go-between'	Thompson et al, 2006
Expert status	Thompson et al, 2006
High level of innovation	Thompson et al, 2006
High level of proficiency	Lyons et al, 2006
Credibility Supporter and facilitator	Thompson et al, 2006 Policy analysis
Persuade healthcare providers to use evidence. Promote evidence-based practice	Doumit et al, 2008
Leadership	Policy analysis
Implementation of organisation programmes	Policy analysis
Develop and improve standards	Policy analysis
Disseminate good practice	Policy analysis
Improving awareness (of problem)	Policy analysis
Strong clinical lead	Policy analysis
Support theory-practice gap	Policy analysis
Have power	Policy analysis
Empowerment and confidence	Policy analysis
Improvement in practice	Policy analysis

Appendix 3.4: Intermediary in Policy Context

Role	Function/with whom	Stated impact	Reference source
<p>Infection control nurse</p>	<p>'public health function including the prevention of disease and injury to patients, clients and communities'</p> <p>'specialist advice and support on infection control procedures within health and social care settings'</p> <p>Specialist knowledge, evidence-based practice, teaching and learning, management and leadership, clinical research</p> <p>'Uses several strategies to communicate complex information and engage with individual and groups who may be resistant or have barriers to understanding'</p> <p>'Acts as a source of specialist advice and information to clinical or departmental staff, patients and carers within the limits of his/her knowledge, referring queries on to senior team members as appropriate'</p> <p>'work as part of the Infection Control Team to provide a service which covers all aspects of prevention, investigation, surveillance and control of infection throughout the Trust'</p> <p>'management, leadership, research /audit, education and development, clinical responsibilities'</p>	<p>'one ICN for every 250 beds'</p> <p>'provide specialist advice, leadership, outbreak management, policy formulation, epidemiological skills, education in relation to infection prevention'</p> <p>'As part of the Infection Control Team participate in the team objectives and the implementation of the Trust Infection Control programme. Provides specialist advice on the care of patients, often with multiple co-morbidities, and transmissible infections in complex situations'</p> <p>'develop and improve standards and quality of patient care in relation to Infection Control practices'</p> <p>'will provide direct clinical supervision and management of the Infection Control Nurses (ICNs) and the Infection Control Team Secretary'</p>	<p>Infection control Nursing (Northern Ireland 2005)www.dhsspsni.gov.uk/infection-control-nursing.pdf</p> <p>WAG, 2004</p> <p>ICNA, 2000</p> <p>Local Trust Policy</p>
<p>Link nurse</p>	<p>'not substitutes for infection control teams'</p> <p>'coverage needs to be widespread across a Trust'</p> <p>'The role of the Infection Control Link Nurse is to act as a resource in their clinical area and to liaise with the Infection Control Nurse. They act under the supervision of</p>	<p>'disseminating and monitoring compliance with good practice'</p> <p>'role models for infection control'</p>	<p>National Audit office, 2004</p> <p>DoH, 2004 –Modem Matron</p> <p>www.merseycare.nhs.uk/services/clinical/infection</p>

	ICNs as a resource and role model for colleagues. They are not seen as a substitute for an adequately resourced ICN service'	'Little published objective evidence Subjective benefits identified <ul style="list-style-type: none"> • Improved awareness • Higher profile for infection control Measurable objectives described by Ching & Seto (1990)'	Southampton University Hospitals NHS Trust
Modern matron	'strong clinical leader at ward level'	'prevention of hospital acquired infection and...improving hospital cleanliness' 'linchpin of standards, and they have the power and authority to lead change' 'Through strong clinical leadership, best practice in infection control and prevention' 'will establish a cleanliness culture across their units'	National Audit office, 2004 DoH, 2004 –Modern Matron http://www.guysandstthomas.com www.nhsestates.gov.uk
Ward housekeeper	'improve the delivery of basic care services to patients and enhance the patient environment' 'non-clinical needs of patients leaving nursing staff free to focus on clinical needs'	'30% increase in cleaning standards, better management of viral gastro outbreaks'	National Audit office, 2004
Infection control doctors	'provide specialist advice, leadership, outbreak management, policy formulation, epidemiological skills, education in relation to infection prevention'		WAG, 2004
Practice facilitator educator	'to support the theory-practice gap for good infection control practice'	'enhance and embed core practice elements, particularly those relating to IPC, such as hand hygiene, aseptic technique, isolation nursing and other practices that impact on transmission of	RCN, 2009

		micro-organisms'	
Infection control coordinator	'coordinate infection control activities and infection control staff'		DoH, 2004 –Modern Matron
Infection control team	'minimise the risk of infection to patients and staff and to ensure that all staff are aware of their responsibilities to prevent and control infection' ' responsibility for surveillance, prevention and control of infection They also offer advice on surveillance and control of hospital-acquired infection presenting in the community, and on the prevention and control of community-acquired infections that are likely to have an impact on hospital infection control'		Local policy
Clinical nurse specialist infection control	'responsible for the management, leadership, organisation and delivery of care of the Infection Control service' 'to prevent and control infection throughout the Trust by: The management of clinical case loads Clinical advice and care Intensive surveillance and investigation of infection Audit and quality assurance Education and research Policy development and implementation'	'Clinical, surveillance, audit and quality, education, administration, research/clinical effectiveness, managerial, personal development'	Royal Gwent Hospital
PPI representative (Patient/public involvement)	'To participate in staff Infection Control Training To assist in audits of infection Control practice e.g. environmental / hand hygiene audits To attend and participate in the Infection Control Link Network promoting good infection control (IC) practice Identifying IC risks and participate in related audits development and monitoring of IC policies To be involved in infection control promotions e.g. exhibition stands which includes training for representatives to enable them to provide advice to the public'		PPI@barnet-pct.nhs.uk

<p>Champions</p>	<p>'a key role in helping to assist in the allocation of appropriate resources to provide comprehensive services to prevent health and social care associated infection and to identify gaps and bring these to the attention of the appropriate organisations'</p> <p>'In order for the Champion to be truly effective and have real credibility the role must be underpinned by a clearly recognisable, transferable set of skills, competences and knowledge'</p> <p>'motivated and interested, assertive but also a team player, role model for others, mentor'</p> <p>'clinical and ward managers and their deputies, senior enough to assess the practice of all healthcare professionals and can be responsible for practice in their areas...ideal members of staff to take on the clinical champion role'</p> <p>'supporter and facilitator'</p>	<p>Leadership</p> <p>Maintaining up to date Knowledge and Skills</p> <p>Maintaining up to date knowledge of parallel activities through networks/briefings</p> <p>Support Learning and Good Practice in the workplace</p> <p>Monitoring compliance</p> <p>Recording compliance and reporting issues</p> <p>Take corrective action when required</p> <p>Maintaining quality standards</p> <p>Liaise and communicate with relevant representatives</p> <p>Support risk assessment</p> <p>Cascade information</p> <p>Support Continuous Professional Development</p> <p>Auditing skills</p> <p>Change management'</p> <p>'empowered to challenge poor performance by all staff in all areas'</p> <p>'Practice at the trust has improved and the confidence of the Trust's staff in their standards of care has been restored'</p> <p>'Patients have said anecdotally that they are reassured to know that clinical champions are monitoring standards on the wards'</p> <p>'by being curious, listening and then sharing information, staff was supportive of her and the improvement initiative'</p>	<p>NEskillsdevgroup@skillsforhealth.org.uk NPSA WUTH, 2008 CACCN, 2007</p>
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Appendix 3.5: Data Extraction Template

Study's data extraction form

(from Dielman et al, 2011; Rycroft-Malone et al, 2012)

Document: title, authors, date, where located):
Document details (type of study, evaluation methods):
How do intermediaries change the reasoning or behaviour of others to promote best practice in infection control?
Intermediary role –how described:
What is the intervention and objective:
Mechanisms: implicit/explicit. What is the evidence of the impact of the intermediary?
In which circumstances?
Contextual factors: What is the setting?
Is there evidence of the interaction between the setting and the intervention to promote best practice?
What works, for whom?
Outcomes: Are successful outcomes described?

Appendix 3.6: Search Results

Database	Search terms and results
ASSIA	Infection control (SH) & Champion (1) CNE (0) CNS (0) Practice developer (0) Knowledge broker (0) Opinion leader (2) Facilitator (1) Linking agent (0) Change agent (13) Infection control nurse (46) Total=63 Total citations after first screen=2
PsycInfo	Infection control (SH) & Champion (0) CNE (0) CNS (0) Practice developer (0) Knowledge broker (0) Opinion leader (0) Facilitator (0) Linking agent (0) Change agent (0) Infection control nurse (0) Total citations (0)
CINAHL	Infection control TX & Champion (20) CNE (0) CNS (25) Practice developer(0) Knowledge broker(0) Opinion leader (1) Facilitator(8) Linking agent(0) Change agent(9) Infection control nurse(61)

	<p>Total=124</p> <p>Total citations = 24</p>
<p>Medline via Pubmed</p>	<p>Infection control (MESH) & Champion(0)</p> <p>CNE (4)</p> <p>CNS (41)</p> <p>Practice developer (0)</p> <p>Knowledge broker(0)</p> <p>Opinion leader(0)</p> <p>Facilitator(0)</p> <p>Linking agent (0)</p> <p>Change agent(0)</p> <p>Infection control nurse(0)</p> <p>Total=45</p> <p>Total citations =1</p>

Appendix 4.1: Data Collection Summary

Study Objectives	Methods	Type of impact/outcomes
To identify examples of intermediary mechanisms of action in infection control practice	Interviews, observations, documentation/data review	Absolute change (shared conditions) Relative change (unique to this setting) Process of change
To determine the impact of the identified examples of mechanisms on practice and patient care	Interviews, documentation/data review, observations	Absolute change Relative change Process of change
To identify contextual issues that act as enablers or barriers in infection control	Interviews, observations, documentation/data review	Absolute change Relative change Process of change
To identify the interplay between mechanisms of action and context that facilitates or constrains best practice in infection control	Interviews, observations, data/documentation review	Absolute change Relative change Process of change

Appendix 4.2: Interview Guide (case one) Version 1 24/8/10

Interview topic guide

Topic areas	Guiding questions
Participants' roles -clarification	What is your role? What do you do? In what areas do you operate? What influences your work?
Infection control –exploration and clarification	What is infection control? How do you perceive the problem of healthcare infections? What impact do infections have? For whom? What are the problems? For whom? How is infection control managed? Do you have specific responsibilities in infection control? What are they? What do you think works well to control infections? What doesn't work as well? What influence infection control where you work, both positively and negatively? What does the Organisation do in order to optimise infection control?
Definitions and clarification of the term 'intermediary'	What do you think the term intermediary means? Can you think of people who act as 'intermediaries' specifically in infection control? What do they do? What works best –give examples What doesn't work as well –give examples
Motivators for certain actions in infection control	What sources of evidence do you use in infection control? What are your information sources? How do you use information sources? Are there incentives in your place of work in infection control? What are they? Do people motivate you? Who are they? What do they do that acts as motivation? Are you motivated/influenced by anything external to the Organisation?
Individual actions in infection control	What else informs your actions in infection control? Policies? Strategies? Media? Technology? Tools & Equipment?
Support mechanisms	Do you feel you need support for your role in infection control? What type of support do you use?

	<p>Networking –internal/ external to the Organisation –levels? Type/ Nature? Do you use peer networking systems?</p>
Outcomes	<p>What do you think are the outcomes for infection control? What is the impact of your work? For whom? How?</p>
Context	<p>How do you see your role within the Organisation? How does the Organisation influence what you do? Any other influences? From where? Who?</p>

Appendix 4.3: Spradley's Dimension of Observations (1980) Version 1 24/8/10

Infection Control intermediaries: a case study

Direct non- participant observation schedule

Code

Date and times

Dimensions of descriptive observation (Spradley, 1980)

1. SPACE - layout of the physical setting; e.g. rooms, outdoor spaces
2. ACTORS - the names and relevant details of the people involved
3. ACTIVITIES - the various activities of the actors
4. OBJECTS - physical elements: e.g. furniture
5. ACTS - specific individual actions
6. EVENTS - particular occasions, e.g. meetings
7. TIME - the sequence of events
8. GOALS - what actors are attempting to accomplish
9. FEELINGS - emotions in particular contexts

Dimension of observation	Notes
Space	
Actors	

Activities	
Objects	
Acts	
Events Time	
Goals	
Feelings	

Appendix 4.4: Study Information Sheet

Infection control intermediaries: a case study

I am a researcher from Bangor University doing a study in this clinical area. I am particularly interested in finding out more about what nurse champions do in infection control. As part of the study, I am carrying out some observations of nurse champions in their day to day work. If this involves any observation of you in any interaction or meeting with the nurse champion, I will firstly ask your permission. I will not be collecting any data about you. If you decline to give your permission, I will not carry out the observation. If you would like to know more about the study, please do not hesitate to contact me:

Lynne Williams
School of Healthcare Sciences
Bangor University
Bangor, Gwynedd
01248 383170

Appendix 4.5: Initial List of Codes

Initial list of Codes

Theme	Code	Ref to question
Context:		
Inner		
Organisational control	C-OC	4.3,4.4
Strategic direction	C-SD	4.5
Management systems	C-MS	4.3
Leadership strategies	C-LS	4.4
Roles	C-ROL	4.3,4.4
Training	C-TR	4.6
Governance	C-GOV	4.4
Appraisal	C-APP	4.6
Feedback	C-FB	4.6
Staff	C-ST	4.6, 4.4,4.7
Resources	C-RES	4.8, 4.6, 4.4
Education	C-ED	4.4, 4.5, 4.6
Cultural	C-C	4.7, 4.8
Behavior	C-B	4.7, 4.8
Ways of working	C-WW	4.4, 4.6, 4.8
Resistance to change	C=RC	4.7
Attitudes	C-ATT	4.7
Outer		
Social	C-SOC	5.1
Structure	C-STR	5.2
Environmental	C-ENV	5.1,5.2
Political	C-POL	5.2
Mechanisms		
Actions		
Courage	M-AC	2.5, 8.2
Challenge	M-ACH	8.2,2.5
Power	M-AP	2.1, 7.1, 8.2
Mediation	M-AM	1.1, 1.2
Breaking through barriers	M-ABR	1.1, 2.1, 2.5, 8.2
Personal ownership	M-APER	2.4
Change agents	M-ACH	2.1, 1.1, 1.2
Role modelling	M-AROL	2.1

Activities		
Team players	M-ACT	2.5, 7.1, 8.2
Training	M-ACTR	3.1, 3.2
Surveillance	M-ACSU	1.1, 4.4, 4.8, 6.2
Teaching and sharing knowledge	M-ACTS M-ACK	3.1, 3.2 2.5, 4.8, 8.2
Operate at different levels	M-ACOP	1.1, 2.1
Skillful	M-ACSK	2.5
Reminding	M-ACREM	4.8, 2.5, 1.2
Behaviours		
Assertive	M-BA	2.5
Vocal	M-BV	2.5
Use experience	M-BU	2.5
Mentor behaviour	M-BMEN	2.5
Influencing skills	M-BINF	2.5
Respected	M-BRES	2.5
Outcomes		
Behaviour change	O-BH	8.1, 8.2,
Attitude change	O-ATT	4.7
Change in practice	O-CH	8.1, 8.2
Better networking	O-BEN	8.1, 8.2
Identifying gaps	O-IDG	8.1, 8.2
Monitoring compliance	O-MONC	8.1, 8.2
Cascade new information	O-CASI	8.1, 8.2
Improved confidence	O-IMPC	8.1, 8.2
Improvement in infection rates	O-IMPI	8.1, 8.2, 5.1
Reassurance for patients	O-RP	8.1, 8.2
Patient empowerment	O-PE	8.1, 8.2

Appendix 4.6: Interview and Observation Contact Summary Form

Contact summary sheet –Interview and Observation

<u>Code:</u>	
<u>Date of interview:</u>	
<u>Main themes</u>	
<u>Research questions:</u> Interventions Mechanisms of action Impact of intervention on practice and patient care Contextual factors and how they influence interviewee's work	
<u>Any new information not previously considered?</u>	

Appendix 4.7: Document Summary Form

Contact summary sheet –Documentation

Name of document:	
Significance to study:	
Summary of document:	
Link to research objectives:	

Appendix 4.8: Revised List of Codes

Table
Revised list of codes

Theme	Code
Context	
Organisational Performance targets Monitoring systems Resources for infection control (education, reminding, labels) <u>Policy as a lever</u> <u>Staff relationships</u>	
Political National campaigns (saving lives) Patient choice of hospital Public concern re HAIs	
Outer Ward structure –(number of sidewards, isolation ward) Collaboration (between management systems and infection control team) Level of networking between IC teams –(healthy competition??)	
Inner Capacity issues Investment in champion roles Matron role and responsibilities Priority for infection control (time for link nurse audit, getting staff on board) Staff commitment to reducing HAIs Lack of time to do things Capacity Culture –IC not perceived as part of total patient care	
Intermediary interventions: Teaching (ad hoc, structured, on wards) Being clinical (working on wards, visibility) Communication (talking to staff, listening, empathy, challenging) Problem solving –(advice, questioning, thinking up strategies) Supporting staff –time given to staff, working alongside, impromptu advice) Engaging with staff –friendly, approachable, visible, hands on) Being accessible –direct contact, email, phone, walking around wards, one to one) Providing feedback –verbal, face to face, audit tools	

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<p>Mechanisms:</p> <p>Staff Feel they have source of support (confidant) Policies and standards are reinforced Target awareness (focusing people's minds) Staff more aware of own practice <u>Tailoring individual needs,</u> Staff develop more confidence in their practice Staff have an advocate Aware of importance of documentation Better armoured (empowered) to challenge others More able to confront directly Rewarded by positive feedback (praise) Constant reminder - 'drip drip' effect Practice is challenged constantly Grass roots education more real <u>Surveillance - 'policing', threat, autocratic?? challenge</u></p> <p>Patients Can identify IC staff and approach them Prompted to take action(HH)</p> <p>Organization Problems in IC are identified early Strategies are tailored to meet individual or ward needs <u>Intermediary organized as a broker,</u> Links between management and staff are developed Better understanding of people on the ground floor Monitoring of staff effectiveness (link nurse) Breaking down barriers between ward and IC team</p>	
<p>Outcomes:</p> <p>Staff Staff become more knowledgeable in infection control Improved confidence lead to a more empowered workforce Pride in standards</p>	

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Deleted: Have more confidence in the service?
 better informed through personal contact?

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Receive some degree of education

Patients

Increased confidence for safe care

Have more confidence in the service

Better informed through personal contact

Organization

Teamworking enhanced

Lower infection rates

Provision of education for staff

Infection control inherent in everyday work

Transferable programme for other Organisations

Monitoring systems avoid IC 'falling off the radar'

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Appendix 4.9: Conceptually clustered matrix example (Miles & Huberman, 1994)

<i>Intervention</i>	<i>Outcome</i>	<i>Context</i>	<i>Mechanism</i>
Clinical presence	<p>Improved knowledge (St) Improved confidence (ST/Pts) More empowered workforce (Org) Better teamwork (Org) Better informed (Pts)</p> <p>Infection control inherent everyday/everywhere (Org)</p>	<p>Investment in 'champion' role</p> <p>Culture –placing IC at heart of holistic care</p>	<p>On the spot information giving</p> <p>Ad-hoc teaching</p> <p>Constant reminding – 'drip drip'</p> <p>Boosting confidence</p> <p>Being available to help solve problems</p> <p>Being recognisable</p>
Engaging with staff	<p>Staff feel supported (St)</p> <p>Promoting better teamworking (Org)</p>	<p>Lack of time</p> <p>Capacity issues</p> <p>People's priority for infection control</p> <p>Staff relationships</p>	<p>Acting as confidante</p> <p>Rewarding through praise</p> <p>Helping to build relationships</p> <p>Brokering</p> <p>Being approachable and accessible</p> <p>Acting as 'sound off' board</p> <p>Being a defender of people</p> <p>Using the right people skill at the right time</p>

Appendix 4.10: Ethical Approval Letters

COLEG ICHYD A GWYDDORAU YMEDYGIAD
COLLEGE OF HEALTH & BEHAVIOURAL SCIENCES
YSGOL GWYDDORAU GOFAL ICHYD
SCHOOL OF HEALTHCARE SCIENCES



23 November 2010

Mrs Lynne Williams
Lecturer
School of Healthcare Studies
Bangor University

Dear Mrs Williams

School of Health Care Sciences Research Ethics Committee

Infection Control Intermediaries: a case study

Thank you for submitting the amendments required by the School of Healthcare Sciences Research Ethics Committee.

I am pleased to inform you that you now have approval to proceed with your research proposal.

Yours sincerely

Reverend Wynne Roberts
Chair
School of Healthcare Sciences Research Ethics Committee

Cc Dr Christopher Burton, Supervisor

PRIFYSGOL BANGOR
TRON ICHYD/CY
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DR J MALCOLM GODWIN BSc, DipSc, RSC, CSM, RMA, BA, BEd
PRIFYSGOL GWYDDORAU ICHYD (ACTING HEAD OF SCHOOL)
LHDWNGREID - TRON ICHYD/BANGOR
www.bangor.ac.uk www.bangor.ac.uk/2008/ethicscommittee



The Black Country Research Ethics Committee

Prospect House
Fishing Line Road
Redditch
Worcestershire
B97 6EW

Telephone: 01527 582535
Facsimile:

08 November 2010

Mrs Lynne Williams
Lecturer in Adult Nursing
Bangor University
Centre for Health-Related Research
School of Health Sciences,
Fron Heulog, Bangor, Gwynedd
LL57 2EF

Dear Mrs Williams

Study Title: Intermediaries in infection control: a case study
REC reference number: 10/H1202/78

The Research Ethics Committee reviewed the above application at the meeting held on 01 November 2010. Thank you for attending to discuss the study.

Ethical opinion

- The Committee told you that the study is well written.
- The Committee suggested that the PIS could make clear where and when the study would be conducted. You agreed.
- The Committee suggested that the CF could be on one page. You agreed.

The members of the Committee present gave a favourable ethical opinion of the above research on the basis described in the application form, protocol and supporting documentation, subject to the conditions specified below.

Ethical review of research sites

The favourable opinion applies to all NHS sites taking part in the study, subject to management permission being obtained from the NHS/HSC R&D office prior to the start of the study (see "Conditions of the favourable opinion" below).

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 ("R&D approval") should be sought from all NHS organisation(s) involved in the study in accordance with NHS research governance arrangements. Guidance on applying for NHS permission for research is available in the Integrated Research Application System (IRAS) or at <http://www.rdforum.nhs.uk>.

Where a NHS organisation's role in the study is limited to identifying and referring potential participants to research sites ("participant identification centre"), guidance should be sought from the R&D office on the information it requires to give permission for this activity.

For non-NHS sites, site management permission should be obtained in accordance with the procedures of the relevant host organisation.

Sponsors are not required to notify the Committee of approvals from host organisations.

It is responsibility of the sponsor to ensure that all the conditions are complied with before the start of the study or its initiation at a particular site (as applicable).

Approved documents

The documents reviewed and approved at the meeting were:

Document	Version	Date
Investigator CV		11 October 2010
Protocol	v1	20 September 2010
CV Academic Supervisor		14 October 2010
Letter from Funder RCBC Wales		14 October 2009
Study Information Sheet	v1	24 August 2010
REC application		12 October 2010
Covering Letter		10 October 2010
Interview Schedules/Topic Guides	v1	24 August 2010
Interview Schedules/Topic Guides	v1	24 August 2010
Letter of invitation to participant	v1	24 August 2010
Participant Information Sheet: PIS Group Interview	v1	24 August 2010
Participant Information Sheet: PIS Observation & follow-up Interview	v1	24 August 2010
Participant Information Sheet: PIS Interviews	v1	24 August 2010
Participant Consent Form: Consent - Interview	v1	24 August 2010
Participant Consent Form: Consent - Observations	v1	24 August 2010
Evidence of insurance or indemnity		01 August 2010

Membership of the Committee

The members of the Ethics Committee who were present at the meeting are listed on the attached sheet.

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 Service 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
- Adding new sites and investigators
- 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.

10/H1202/78

Please quote this number on all correspondence

With the Committee's best wishes for the success of this project

Yours sincerely



Jenny Tyers (Mrs) for and on behalf of
Dr Joseph Arumainayagam
Vice Chair

Email: jenny.tyers@westmidlands.nhs.uk

Enclosures: *List of names and professions of members who were present at the meeting and those who submitted written comments "After ethical review – guidance for researchers"*

Copy to: *Dr. C Burton*
School of Healthcare Sciences
Bangor University
Bangor
LL57 2ER

Appendix 4.11: Government Funded Training



NIHR CRN Workforce Development
Enabling learning and development in the Clinical Research Network



**National Institute for
Health Research**



Today's Research; Tomorrow's Care
Ymchwil Heddiw; Gofal Yfory



Ariennir gan
Lywodraeth Cymru
Funded by
Welsh Government

Certificate of Attendance

Lynne Williams

attended

Introduction to Good Clinical Practice (GCP):
A practical guide to ethical and scientific
quality standards in clinical research

on 7th September 2011

Sessions include:

1. The Value of Clinical Research and the role of NIHR CRN & NISCHR CRC
2. GCP: the standards and why we have them
3. Study set up: responsibilities, approvals and essential documents
4. The process of informed consent
5. Case report form, source data and data entry completion
6. Safety reporting in clinical trials

Zoe Whale
Training & Development Manager
NISCHR CRC

Paul Maher
NIHR CRN GCP Training Manager

NISCHR

Today's Research; Tomorrow's Care

Cancer
Ysbyty
Gwynedd
CRC Clinical
Research
Centre

Certificate of Attendance

This is to certify that

Lynne Williams

Attended the training entitled

Valid Informed Consent in Research

Held on

4 May 2011

At

Ysbyty Gwynedd, Bangor



Zoe Whale

Training & Development Manager, NISCHR CRC

Appendix 4.12: Participant Information Sheet

Participant information sheet –interviews

Part 1

Title of study: Infection control intermediaries: a case study

You are invited to take part in a research study which aims to explore what works in infection control to improve practice and reduce risk. Please read the information on this sheet carefully before deciding to take part. If you have any questions, please do not hesitate to contact me –my contact details are on the last page of this information sheet.

- Part 1 explains the study's purpose, and what it will involve
- Part 2 provides you with further information on how the study will be conducted

Why is the study being undertaken?

I am particularly interested in finding out who or what promotes evidence-based practice in infection control. I am conducting the study in xxxxxx to understand the role of key individuals and to see how they promote evidence based practice within the Organisation.

Why have I been chosen?

You have been approached as I am particularly interested in the views of individuals who have certain responsibilities for infection control. You have been approached because of your interest and responsibility within infection control.

Do I have to take part?

Taking part is entirely voluntary, and you may withdraw at any stage.

What will I have to do?

You are invited to take part in the study by taking part in an interview. The interview will take part in a venue and at a time convenient to you, and will be audio taped. During the interview, I will be asking your views on what works best in promoting evidence-based practice in infection control.

If you express an interest in taking part, a second letter will be sent to you to arrange a date and time and providing you with the topic areas to be discussed during the interview.

Please read the additional information in Part 2

Part 2

What happens if I decide to withdraw from the study?

Taking part is entirely voluntary, and you may withdraw at any time.

What if there's a problem during the study?

It is not anticipated that problems arise during the course of this study. However, prior to commencing the interview, I will outline the opportunity for participants to discuss any difficult issue that may arise during the course of the interview. The researcher will ensure that this opportunity is available, in private, at the end of the interview.

How can I be ensured that any information I give during the interview is confidential?

No names, workplace, or information that could identify participants or their employers will be used in the reporting of the findings of this study. In addition, prior to commencing the interviews, I will highlight the importance of confidentiality within the group, and how participants' rights to confidentiality will be upheld. However, information would have to be disclosed if there was a belief that someone may be at risk of harm, in line with the law. In this instance, the interview would be stopped and a research governance or clinical manager contacted. Verbatim quotations may be used during publication of the study's results, but no individual's details will be disclosed. All materials generated during the study will be stored in a locked filing cabinet, accessed only by the researcher and academic supervisors. Personal details will be destroyed after six months from the start of the study. At the completion of the study, anonymised data will be retained for secondary analysis and teaching purposes.

How will the study's results be reported?

It is hoped that the study's results will be published through a report, a peer-reviewed journal article, as well as dissemination through conference and/or relevant study days within the workplace.

Who is funding the research?

Research Capacity Building Collaboration Wales, who are funded by the Welsh Assembly Government to support research undertaken by nurses and therapists.

How has the study been reviewed?

The study has been reviewed by my academic supervisors, the xxxxxx Ethics Committee peer review process and by the School of Healthcare Ethics Committee, Bangor University, and the xxxxxx Group of Hospitals Research Ethics Committee.

Thank you for considering to participate in this study

If you are happy with the information provided, and would like to take part in the study, please contact me at the address below by sending the slip back in the pre-paid envelope, or if you prefer by email or phone (please leave a contact number on the answer machine).

.....
.....

I.....would like to take part in the study. I am happy for you to contact me with further details. My contact details (including phone no) are:

.....
.....
.....

Researcher:
Lynne Williams (Lecturer in Nursing),
School of Healthcare Sciences,
Fron Heulog, Ffriddoedd Rd,
Bangor,
Gwynedd,
LL57 2EF

Phone: 01248 383170
Email: hssell@bangor.ac.uk

Appendix 4.13: Letter of Invitation

**School of Healthcare Sciences
Fron Heulog
Ffriddoedd Rd
Bangor
N.Wales
LL57 2EF
Tel: 01248 383170**

Dear

Letter of invitation: Infection control intermediaries: a case study

I am writing to invite you to take part in a research study that I am undertaking to explore the role of intermediaries in infection control. In healthcare, there is an acknowledgement that certain individuals, described as 'intermediaries', can achieve a level of success when it comes to promoting evidence-based practice and care for patients. Infection control is one area in which they are active. However, although research has enabled us to understand how 'intermediaries' in general operate, there are few studies that have examined how they operate in infection control, and why they are successful or not.

The study is funded by RCBC Wales and I have obtained approval from both Local Research Ethics Committee and Bangor University School of Healthcare Sciences Ethics Committee.

Please read the information sheet that accompanies this letter. If you decide to take part, please complete the enclosed reply slip and return in the envelope provided by 24th January. Alternatively, you can email or leave a phone message –please supply your contact details. I will then contact you to arrange to meet you to explain the study and obtain your consent to participate. In the meantime, please do not hesitate to contact me at the above address if you have any questions about the study.

Thank you for your time,

Yours sincerely,

Lynne Williams

Appendix 4.14: Consent Form Version 1 24/8/10

Consent form -Interview

Title of Study: Infection control intermediaries: a case study

Researcher: Lynne Williams

Please initial the

boxes

**1. I confirm that I have received the information sheet
dated..... and that I am happy with the information provided**

**2. I am aware that the interview will be conducted by the lead researcher
and that the interview will be tape-recorded**

**3. I am aware that taking part is voluntary and I may withdraw from the
study at any time**

**4. I am aware that verbatim quotations may be used in publications
but that no individual details will be disclosed**

**5. I agree that the data collected in this study may be used in an
anonymised form for future secondary analysis and teaching
purposes**

Signed:.....Date:.....

Researcher:..... Date:

Appendix 5.1 Documentation data Case 1

Data description	Reason for collection	Findings	Code
<p>Healthcare Commission Inspection Report April 2009</p>	<p>To gather background information on case 1 site adherence to Hygiene code, using four duties from the code as benchmarks. This annual report was of interest to the study to understand how the Trust met standards related to infection control, and identify key stakeholders who had specific responsibilities for standards.</p>	<p>Inspection found case site met three duties with no breach of hygiene code identified. Recommendations were made to the Trust in order to meet duty 4: to ensure a clean and appropriate environment for healthcare. This was the last report by the Healthcare Commission before the work was transferred to the Care Quality Commission in 2009, and the document suggests that work previous to study data collection was focused on cleanliness of equipment, and implementation of policies for decontamination of equipment.</p>	<p>Da1</p>
<p>Care Quality Commission report September 2009</p>	<p>To study findings from inspection about case site. The report found that concerns about 12 measures were present, which required implementation of recommendations. This report was of interest as it provided information about the first CQC inspection at the Trust and provided background detail of roles and responsibilities at clinical and operational levels.</p>	<p>The inspection recommended focus on the role of the DIPC (director of infection prevention and control) to ensure all duties were fulfilled, the matron role to ensure accountability and responsibility for cleanliness. The inspection report also focused on cleanliness of environments and decontamination of equipment.</p>	<p>Da2</p>
<p>Care Quality Commission follow up report 2009</p>	<p>To elicit information about follow up procedures to meet recommendations and requirements from inspection undertaken in September 2009. This report was collected to study the implementation strategies undertaken by the Trust.</p>	<p>The report found that the Trust had designated a DIPC (director of infection prevention and control, who would be accountable to the chief executive and the board. The director was now directly responsible for the infection control team, with regular communication and formal reporting structure. Matrons undertook monthly ward audits,</p>	<p>Da3</p>

		and had responsibilities for cleanliness of ward environments and mattresses inspections. The document was of interest because it outlined key roles and responsibilities for IPC, and provided information about job description (matron role).	
Trust Aseptic Technique Policy	To gather information about specific policy employed in the case site, and to understand the requirements to carry out procedures on the part of study participants.	The data from this document was of interest to the study because it outlined the processes in place to implement the policy, from education and training of staff, to audit and monitoring mechanisms. The policy demonstrates how infection control policy is implemented from managers/heads of services whilst concurrently outlining individual responsibilities of all healthcare workers. The policy also explained how the trust used the 'Saving Lives' audit tools to monitor compliance in clinical areas, and the significance of regular feedback on performance.	Da4
Infection control and hand hygiene training policy	To gather background information about infection control policy in the case site, and to understand the requirements to carry out procedures on the part of the study participants.	The policy was useful because data collected outlined individual roles and responsibilities for chief executive, director of infection control and prevention, clinical director, infection control committee, medical heads of service, matrons, senior managers, employees. Additionally, the policy showed the process of infection control training for all Trust employees, and how attendance is monitored.	Da5
Job description – Infection prevention and control clinical	Provided on request. To provide better understanding of the expectations about the	Data of interest to the study as the clinical champion role explained. The job summary showed lines of accountability,	Da6

champion	role of clinical champion	and outlined the main aims of the role –to contribute to prevention, surveillance, investigation and control of HCAs, undertake quality assurance audits, deliver educational programmes, and implement policy within clinical areas. Principal roles and responsibilities outlined the expectation that clinical champions worked clinically, challenged poor practice, monitoring standards, collect, analyse data and prepare reports, develop and deliver education for staff, and liaise with different groups of staff.	
Newsletter for staff and Hospital members 2010/11	Gathered during visit to hospital. To gather background information about the case site and specifically, infection prevention and control	Of interest because data showed how infection control information relayed to staff and Foundation Trust members. Trust Chief Executive provided summary of Trust performance for previous 12/12 including rates of MRSA and C Difficile. Other articles of interest to the study included new move to encourage visitors to bring patients pot plants rather than cut flowers as part of infection control policy, messages of thanks from patients which included reference to levels of ward cleanliness and commitment to tackling healthcare associated infections.	Da7
Local magazine Winter 2010	Gathered in case site. To provide background information to case site location.	Of interest, article on advice and information to keep health in in the community, which included how to avoid Norovirus, with advice provided by lead infection control nurse.	Da8
Matron's charter	Gathered as part of exploration of clinical matron role. To gather background information about specific roles for infection control in case	Data suggests that the role of the matron is encompassed in ten key commitments which spell out everyone's responsibility in infection prevention and control,	Da9

	site.	matrons' role to establish cleanliness culture across clinical areas, authority to withhold payments for cleaning contracts, and embedding cleaning staff within ward teams.	
Ward infection control guidelines	Noted during data collection periods. To gather specific information about embedded units in case site	The document outlined common procedures undertaken in the ward environment and the risk of infection associated with them. The document reflected the role of the champion intermediary in providing information, prompting clinical staff re infection control procedures, and in the provision of feedback on audit (Saving Lives scores). The champion intermediary uses the first person through the document to emphasise the personal relationship with the ward.	Da10
Patient leaflet	Noted during visit to one ward. To provide the backdrop to the case site embedded units, and to elicit specific information about information relayed to patients/public about infection control procedures	Useful to show how professional staff engage with patients/public about infection control procedures. Hand hygiene technique described, and other guidance provided which impact on infection control e.g. visiting times.	Da11
Infection prevention and control hub portal	Accessed during data collection periods. To understand ways in which case site relayed specific information about infection control.	Data related to specific infection rates (e.g. MRSA), policies and guidelines, surgical site surveillance, training, Saving Lives, documents, and key contacts. The portal reflected efforts in case site to provide staff with readily available information source, transparency in terms of figures and trends, and support to undertake training and improve knowledge of infection control issues.	Da12
HCAI data capture system	Collected during data collection period. To	Month/year specific infection rates reported against national	Da13

	understand ways in which infection rates are monitored and reported across the case site.	target rates.	
Essence of Care Champions programme powerpoint	To understand Trust approach to using champions in clinical areas to support staff and promote better standards of care	Useful document which outlined definition of champion, role of champion, and ways in which trust is promoting champions programme across clinical areas.	Da14
Norovirus poster	Noted in clinical areas during data collection periods.	Of interest as data reflects local efforts (case site) as opposed to general efforts to recognise and avoid specific Norovirus infection. Information sources provided for advice/support.	Da15
Healthcare Associated Infections patient information booklet	Gathered during data collection periods in embedded units. To understand how patients /relatives are informed about HCAs whilst in hospital.	Written in lay language, document provides overview of HCAs, causes of infections, and reassurance about processes and policies implemented in the Trust to reduce the risks of HCAs.	Da16
Health Magazine	Gathered during data collection periods in hospital.	Provided background information about cleaning company which was contracted to provide clinical cleaning services in case site.	Da17
Hospital pocket information guide	Collected during data collection periods to understand layout of hospital and observe how infection control messages relayed to patients and public.	Written in lay language, guide provides written reminder of organisation's commitment to reducing the risks of HCAs, and offered advice about hand hygiene, and bringing in cut flowers.	Da18
Hospital charity leaflet	Collected during data collection periods to provide background information.	Written in lay language, the leaflet provided background information about the case site.	Da19
Patient advice and information leaflet	Collected during data collection periods to provide background information.	Written in lay language, the leaflet provided background information about the case site.	Da20

<p>Trust Annual report infection prevention and control 2009/10</p>	<p>Collected to understand the background to the infection control team in case one</p>	<p>Detailed the activities of the infection control team, and emphasises a proactive approach to eradicating infections. Figures are provided for different organisms. Objectives are set for following year.</p>	<p>Da21</p>
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Appendix 5.2 Documentation data Case 2

Data description	Reason for collecting	Findings	Code
Infection Prevention and Control strategy	Collected during data collection periods to gather background information about case site.	Data of interest to study as document provides detailed organisational strategic objectives summarised as 'infection control is everybody's business'. The document outlines the importance placed on leadership to drive forward improvement. The document includes the local delivery plan for HCAs across the organisation, vision, aims and delivery objectives.	Db1
IPC Policy	To gather information about specific policy employed in the case site, and to understand the requirements to carry out procedures on the part of study participants.	This document was of interest to understand strategic aims of organisation to guide prevention and management of infections. Management framework set out, and accountability of individuals outlined. Chart demonstrated lines of accountability and core membership of infection control committee.	Db2
MRSA care bundle	Collected during data collection periods to learn about specific implementation strategies used in case site to manage infections.	Data findings of interest to show pathway used by study participants to manage specific infections. Bundle acted as checklist to ensure necessary precautions taken in clinical areas, and heighten awareness of individuals' responsibilities.	Db3
C Difficile patient leaflet	Collected during data collection periods to observe how infection control messages relayed to patients and public.	Written in lay language, the guidance was of interest as it showed how the organisation explained the presence of specific infections. Written in question and answer format, the guidance provided information on prevention of spread in hospital settings and contact details of infection control nurses.	Db4
C Difficile ICP	Collected during	Of interest to reflect specific	Db5

	data collection periods to learn about specific processes employed in case site to manage infections.	guidance available for clinical staff to manage infections. Specific pathway for managing and eradicating C difficile provided in easy to follow format for multidisciplinary team.	
Enhanced surveillance chart	Collected during data collection periods to learn about specific processes employed in case site to manage infections.	Document used in clinical areas and completed by members of the multidisciplinary team as required to provide detailed information if enhanced surveillance required for individual patients where C difficile infection has been diagnosed.	Db6
GP letter	Collected during data collection periods to examine how information relayed between professional groups.	This document was of interest as it provided data to show efforts to maintain communication between professional groups during patient journey. The letter included detail of specific infection, treatment, and contact details for microbiologist.	Db7
ALERT sticker	Collected during data collection periods as part of data to reflect infection prevention and control communication measures used in the case site.	Sticker used by the IPC team to mark the case notes of patients where MRSA has been isolated. Data of interest as it shows processes in place to ensure communication between infection control team and clinical areas.	Db8
E-learning HCAI certificate	Collected during data collection periods to learn about processes in place for the provision of IPC education for clinical staff	National programme used locally providing electronic learning for clinical staff. Data of interest as it used the term 'championing' to relay message.	Db9
Ward welcome pack	Collected during data collection periods to examine how information relayed in case site.	Of interest to study as it provided background information of unit for patients and families. The ward philosophy captured the team's	Db10

		commitment to safety and cleanliness.	
Patient environment cleaning schedule	Collected during data collection periods to learn about cleaning protocols in clinical areas.	Useful to show how environmental cleaning is managed by housekeepers in clinical areas and how documented.	Db11
Notices for family/carers	Collected during data collection periods to learn about how information relayed in case site.	Of interest to show how specific wards/units relayed messages to members of the public about raising concerns. Demonstrated commitment on behalf of clinical staff in maintaining face to face contact with patients' significant others. Signposted communication opportunities for families/carers during visiting times.	Db12
Guidelines for management of C-Difficile	Collected during data collection periods to gather information about specific guidelines in use in case site.	Of interest to show multidisciplinary pathway to manage specific infections across case site.	Db13
C-Difficile protocol	Collected during data collection periods to learn about specific processes employed in case site to manage infections.	Useful to illuminate implementation process for the policy on C difficile protocol. Purpose and procedure for guideline is outlined, as well as management and treatment.	Db14
Nursing and Midwifery strategy 2011/2012	Collected as part of data to understand backdrop to IPC management in case site.	Data useful as it provided details of infection control care metrics across organisation. Reflected how national strategies e.g. high impact changes are reflected in local organisational strategy.	Db15
Hand washing audit	Collected during data collection periods to examine processes used in case site to audit compliance with	Data useful to show how organisation monitors hand hygiene compliance and quality of procedures.	Db16

	hand hygiene.		
Patient transfer document	Collected during data collection periods to learn how information relayed between professionals.	The data showed example of processes in place to mediate transfer of care from one unit to another within case site. Of interest to convey what information considered relevant to pass on to incoming unit, and how IPC risks can be captured to alert staff.	Db17
Case site website	Accessed during and after data collection periods to ascertain background information about the case site and to view specific public information about healthcare acquired infections.	Specific information of interest to study including hand hygiene information, procedure. Background information provided about specific infections, risk, management, and treatment. Infection rates data available for public viewing. Explanatory information provided about specific infections.	Db18
Job description lead infection control nurse	Collected during data collection periods to study remit of specific role, key responsibilities	Of interest to understand nature of role, key responsibilities, role within education, audit, leadership.	Db19
Role specification for Infection Prevention and Control Leads for Wales (Healthcare Associated Infections- Organisational roles,2008)	Collected during data collection periods to understand the specific national role outline for infection prevention and control	Advisory document which aims to support different organisations to implement strategy. The document suggests that NHS organisations require executive leads for infection control, operational leads for Health Boards and champions/lead persons for independent sector.	Db20
Point Prevalence Survey of Healthcare Associated Infections, Medical Device Usage and Antimicrobial Usage 2011	Collected during case study to gather background information about the case site and national context.	Report of survey conducted by Public Health Wales during November 2011 in every Health Board in Wales. The report found that the prevalence of HCAs in Wales was 4.0%.	Db21

Appendix 6.1: Stakeholder Group PowerPoint Presentation (findings)

15/07/2013

What works: A Realist Evaluation study of intermediaries in infection prevention and control

Or: In which ways do different 'intermediaries' promote better engagement with infection prevention and control by changing behaviours and/or practice?

The 'intermediary'

'Intermediaries are individuals within the practice environment who can influence nurses toward specific goals' (Ferguson et al, 2004)

- Examples: change agents, champions, clinical specialist nurses, practice development roles, nurse educators, knowledge brokers
- Infection prevention and control -challenges in embedding evidence in everyday practice
- Realist approach -what works, for whom and in which contexts?
- Case studies (observations, interviews and documentation review conducted in 3 different sites)

Who are the intermediaries in this study?

- › Ward managers
- › Infection control nurses
- › Band 5 champions
- › Link nurse
- › Matron
- › Clinical champion

CMO 1

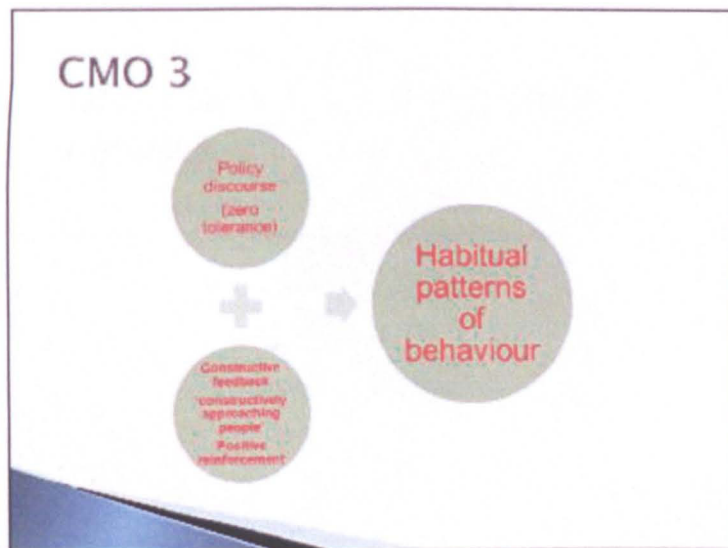
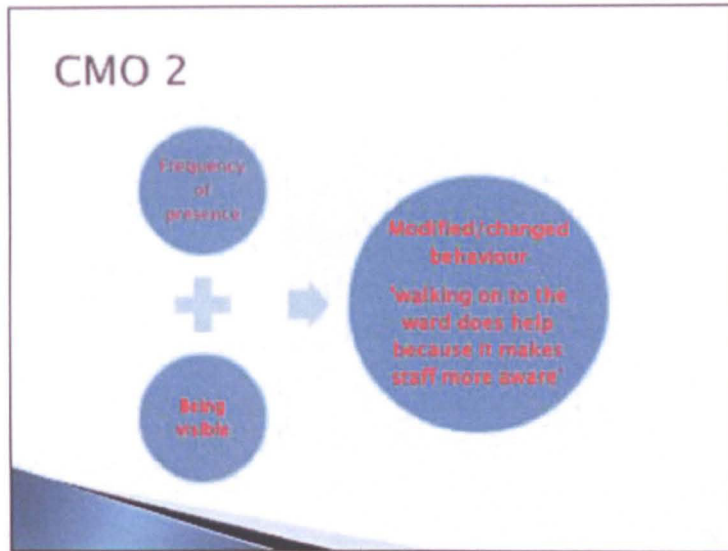
Proximity of presence in clinical areas (nearness)
'Being out there'



Watching over 'eyes and ears for infection control'

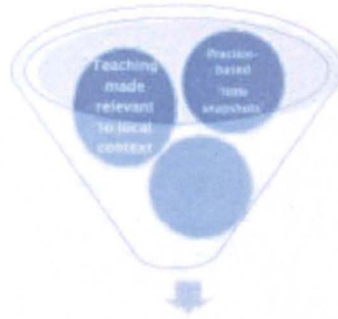


Monitoring practice makes staff more attentive to their own practice (self-surveillance)
'we just want to see how nursing staff are doing things'

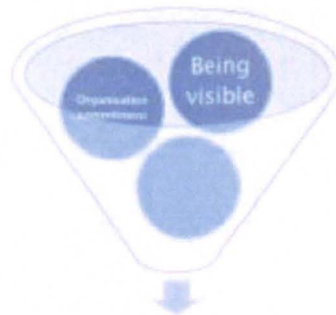


Other findings - 'Drip drip approach'

'Can you do us a teaching session on...'



Other findings - 'My support network'



Dissemination

Organisations/managers/stakeholders:

Guidance – practical recommendations

Nursing/healthcare curricula:

Improving quality and safety

Leadership

'Collective responsibility'

Future research:

Framework –future evaluations

Co-production –embedding stakeholder involvement in future research projects

**APPENDIX 7.1 HAS BEEN REDACTED
AT THE REQUEST OF THE
UNIVERSITY
PLEASE CONTACT THE UNIVERSITY
IF YOU WISH TO VIEW THIS
MATERIAL**