

**INDIVIDUAL, INTER-PROFESSIONAL, AND INSTITUTIONAL
INFLUENCES ON THE KNOWLEDGE TRANSLATION
PROCESS: A QUALITATIVE SYNTHESIS OF THE
EXPERIENCES OF PHYSICIANS AND NURSES IN HOSPITAL
SETTINGS**

by

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Abstract

This study reports on a systematic review and meta-synthesis of English-language qualitative research studies exploring experiences of clinicians in hospital settings integrating evidence-based recommendations into their clinical practice. The goal of the study was to explore influences on the learning processes and environments of clinicians as part of the knowledge translation process. Findings illustrate: (1) how individual influences, such as the positioning of research 'evidence' and prior experiences with evidence-based medicine, shape practitioners' willingness and preparedness to adopt evidence-based recommendations; (2) how inter-professional dynamics, such as the presence of 'practice champions' and 'role clarity', influence the implementation of new health care recommendations; and, (3) how institutional contexts, such as the perceived responsiveness and adaptability of education interventions to hospital priorities and resources, shape people's capacity to undertake knowledge translation. Collectively, these findings suggest the need for reforms to medical education and hospital policies that take into account of adult learning theory and local practices and contexts; the study concludes with recommendations to improve the knowledge translation processes in hospitals.

Keywords: knowledge translation; adult education; meta-synthesis; learning theory; evidence-based; hospitals.

*This thesis is dedicated to my partner,
Family, and, most importantly, a beagle named Otis.*

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Chapter 1.

Introduction

Around the globe, healthcare systems encounter challenges mobilizing research evidence to improve clinical care (Graham et al., 2006; Landers, 2000; Lang, Wyer, & Haynes, 2007). As a consequence, healthcare systems are often slow to introduce practices or changes in practices that can improve patient care and outcomes (Melnik et al., 2004; Scott et al., 2012; Straus, Tetroe, & Graham, 2009). There is also strong evidence that health care professionals often provide patient care that does not reflect evidence-based practices. For the purposes of this thesis, evidence-based practice is defined as clinical care that reflects the best available clinical research and/or syntheses of clinical research (Sackett et al., 1996). It is worth considering that the term ‘evidence-based’ can be problematic. Specifically, what counts as ‘evidence’ is understood to be biomedical research, but such evidence can be disputed and always evolves. Although this dynamic will be discussed later in this chapter and later problematized, the term ‘evidence-based’ is used throughout to remain consistent with the literature in this field.

With that in mind, the failure to adopt what is considered the ‘best available’ clinical practices can adversely impact patient outcomes (Grimshaw, Eccles, Lavis, Hill, & Squires, 2012; Lang & Johnson, 2012). For example, one study conducted in the United Kingdom found that only 40% of primary care patients received care that met practice guidelines recommendations prescribed for four common health conditions (Haines, Kuruvilla, & Borchert, 2004). Meanwhile, another study conducted in the United States found that 70% of patients receive evidence-based acute care, and as many as 30% of patients receive contraindicated acute care – that is, care that is medically unnecessary or potentially harmful (Schuster, McGlynn, & Brook, 1998). Still another more recent study found that primary care patients in twelve American communities

received only 55% of recommended care based on a series of care quality indicators (Asch et al., 2006).

A growing consensus has emerged among policymakers, health systems planners, researchers, and clinicians that efforts to promote the adoption of evidence-based practices in health care settings are necessary in order to improve patient safety and optimize care (Davis et al., 2003; Gray, 2004). Here, the integration of evidence-based practices into health settings and their consistent use by clinicians (also referred to as 'research adoption') is conceived as one of the primary goals of health care systems (Davis et al., 2003). A landmark report launched by the influential United States Institute of Medicine in 2001, "Crossing the quality chasm: A new health system for the 21st century," called for immediate action to address the 'research-to-practice gap' in order to produce improvements in three core metrics identified by an expert panel of leading health services and clinical researchers as critical health care challenges: (i) the misuse of clinical care, such as providing care in a manner leading to medical errors; (ii) the underuse of clinical care, including failing to provide evidence-based care responsive to patient needs; and, (iii) the overuse of clinical care – that is, providing care when the risks outweigh the benefits) (Institute of Medicine, 2001). Although researchers working in the field of evidence-based medicine had been calling for attention to these issues for more than a decade, the Institute of Medicine's report proved instrumental in propelling the research-to-practice gap into policy discussions in the United States and internationally (Hedges, 2007; Lang et al., 2007). Increased political attention to the research-to-practice gap, along with the wider impetus to demonstrate the impacts of health sciences research, has led to a shift in health systems planning, policy, and funding toward greater emphasis on interventions that promote the adoption of evidence-based practices in health care settings (Lavis, 2006). How this concern for the uptake in evidence-based practices effect health care professionals and healthcare settings is thus an important question.

Commonly referred to as 'knowledge translation,' 'knowledge diffusion,' or 'knowledge integration,' in Canada, Australia, and the United Kingdom, and 'implementation science' or 'translational science' in the United States (Graham et al., 2006; Straus et al., 2009), this nascent research field draws its lineage from the

concepts of 'Diffusion of Innovations' and 'Knowledge Economies' (Greenhalgh, Robert, Macfarlane, Bate, & Kyriakidou, 2004). Emerging from rural sociology in the 1970s, Diffusion of Innovations theory emphasized how the uptake of new information is influenced by: (i) the nature of the content being communicated; (ii) the channels of communication; (iii) the passage of time; and, (iv) the social system in which information is directed (Rogers, 2010). Here, the 'uptake' of new information is synonymous with the adoption of evidence-based practices. Meanwhile, coinciding with the neoliberal turn toward increased 'efficiency' and 'productivity', knowledge economies emphasized the importance of 'knowledge workers', such as experts and senior leaders, in translating new practices to subordinates to increase economic output (Drucker & Drucker, 1993). In merging these concepts, the health sciences positioned knowledge translation as "a dynamic and iterative process that includes synthesis, dissemination, exchange and ethically-sound application of knowledge to improve health, provide more effective health services and products, and strengthen the healthcare system" (Canadian Institutes of Health Research, 2012, online). This process involves the 'translation' of evidence-based recommendations in health care settings pursuant to these goals.

The potential of knowledge translation to produce improved care outcomes has fuelled spectacular growth in this research field. Its potential to produce efficiencies, such as decreases in contraindicated care, and thus cost savings, has also aligned knowledge translation with the socio-political agenda of governments, which are oriented to minimizing public expenditures. Within this context, it is perhaps unsurprising that knowledge translation has become a core priority for government funding agencies, including but not limited to the Canadian Institutes of Health Research, the United States National Institutes of Health, the Australian Research Council, and the United Kingdom's National Health Service (Kerner, 2006; Tetroe et al., 2008). As a direct result of increased research funding, a significant number of studies have been undertaken that evaluate the effectiveness of 'knowledge translation interventions' in encouraging the uptake of new information in health care settings (Grimshaw et al., 2004; Scott et al., 2012). These interventions commonly involve continuing professional education interventions, such as workshops and mentorship programs, that seek to mobilize "new knowledge" and changes to features of the health care context, such as new institutional policies or biomedical technologies, to produce changes in clinical practice (Davis, 2006;

McWilliam, 2007). For example, in response to inconsistent monitoring of diabetes complications, a large-scale knowledge translation intervention involving the use of printed educational messages was implemented to promote retinal screening among physicians treating diabetes patients (Zwarenstein et al., 2014).

It is important to note that, while knowledge translation interventions are first and foremost educational interventions (McWilliam, 2007), their educational content and underlying pedagogical influences are poorly described in the literature. Knowledge translation studies seldom make available detailed information concerning the content or pedagogical approaches of these continuing educational activities, nor is this information systematically made available as supplementary materials to published evaluations. Nonetheless, recent studies undertaken to evaluate the impacts of continuing professional educational activities delivered as part of knowledge translation interventions have identified methods, such as mentoring and knowledge brokering, and approaches, such as interactive and multifaceted approaches, that produce the greatest improvements in clinical practice (Gagliardi et al., 2009; LaRocca, Yost, Dobbins, Ciliska, & Butt, 2012; Waring, Currie, Crompton, & Bishop, 2013). Here, continuing education for health professionals is not located within adult learning theory, but instead is positioned as a set of instrumental educational tactics that are seen as more or less successful in producing desired outcomes. In the case of the aforementioned study (Zwarenstein et al., 2014), educational messaging for health practitioners is reduced to a description of a two-page insert card that contains no information regarding underlying pedagogical influences.

These studies suggest that one need simply provide 'good' continuing education interventions for health care professionals without elaborating what 'good' means. However, there is cause to believe that the process of knowledge translation in health care settings is not this straightforward. Indeed, even the most well-meaning and robustly designed knowledge translation interventions have demonstrated varying levels of success in promoting the uptake of evidence-based practice recommendations. An emerging qualitative literature seeks to understand how various factors endogenous and exogenous to health care settings influence the adoption of evidence-based practices. This is further informed by conceptual models focusing attention on 'barriers' and

facilitators' to knowledge translation, which emphasize that changes in health care practice are always shaped by contextual influences (Liyanage, Elhag, Ballal, & Li, 2009; Logan & Graham, 1998; Pronovost, Berenholtz, & Needham, 2008). For example, one study undertaken to identify barriers to uptake of recommended clinical practices among surgical residents outlined how concerns about being perceived as 'questioning' the expertise of senior surgeons limited their adoption of research evidence (Bhandari et al., 2003). Another study outlined how high levels of staff turnover following the implementation of a knowledge translation activities to promote evidence-based care for chronic obstructive pulmonary disease (COPD) impeded research adoption (Brand et al., 2005).

Notwithstanding the contributions of these studies in identifying factors shaping the knowledge translation process, there is an urgent need to synthesize this qualitative literature to better understand influences on the integration of evidence-based practices within and across health care settings. Furthermore, a focus on individual and social influences on the learning processes and environments of clinicians will be critical to understanding mechanisms that shape whether evidence-based practices are – or, indeed, can be – implemented. By synthesizing this research literature, it will be possible to not only generate a more complete understanding of influences on the integration of evidence-based practices into health settings, but also to strengthen conceptual models of knowledge translation by better anchoring them in relation to the lived experiences and social processes of clinicians. In turn, this has the potential to advance how we understand the role of adult learning theory in health education and the factors that influence the implementation of new and recommended clinical practices. This can move us beyond the existing binary that dominates the literature ('barriers' and 'facilitators') toward a more dynamic conceptualization of knowledge translation. Among those working in the continuing health professionals, such 'higher order' or complex understandings of knowledge translation processes promise to provide insights into how to improve the responsiveness of these interventions to the learning needs and environments of health care professionals. Moreover, greater awareness of factors within hospital environments that shape the uptake of new clinical practices is necessary to understand potential policy changes oriented to improving clinical education.

To address this research gap, this thesis systematically examines contextual influences on learning processes and environments in relation to knowledge translation interventions in hospital settings. It seeks to explore how these, in turn, shape the adoption of evidence-based practice recommendations. Specifically, this thesis synthesizes qualitative studies on the translation of evidence-based practices into hospital settings, focusing on three levels of influence on intervention-related learning process and environments that are salient in the analysis of the included studies: (i) individual-level influences, such as previous medical training and preparedness for practice changes; (ii) inter-professional influences, such as role clarity and inter-professional power dynamics; and, (iii) institutional influences, such as the allocation of resources and institutional supports. In synthesizing the qualitative literature to explore these influences on practice changes, this thesis aims to provide policy and practice-relevance information to inform the further development and refinement of knowledge translation interventions in hospital settings. This thesis also develops a conceptual understanding of how individual, inter-professional, and institutional influences on learning processes and environments shape the adoption of evidence-based practices. The hope is that this conceptual understanding can be employed to strengthen the capacity of researchers, policymakers, administrators, health educators, and clinicians to take action to reduce the knowledge to practice gap in hospital settings, and thus improve patient health and well-being.

1.1. 'Knowledge' and continuing education in the health professions

How knowledge translation interventions define 'knowledge' and 'evidence' underscores an epistemological tension between the health sciences and continuing education in the health professions. Among the health sciences, 'knowledge' and 'evidence' are grounded in positivism – that is, positioned as objective 'scientific evidence' that is observable, verifiable and external to individual and context (Cornelissen, Mitton, & Sheps, 2011). Embedded within the knowledge translation field are thus a series of epistemic assumptions regarding what evidence 'counts', and how it should be applied in clinical settings. First, knowledge and evidence are often framed

within a hierarchy that frames positivist forms of research, such as meta-analyses and randomized controlled trials, as the 'best' possible evidence (Evans, 2003). For example, in a widely used hierarchy of evidence, Evans (2003) positions randomized controlled trials at the top of the pyramid and context-specific, expert opinion at the bottom. Within this context, 'experts' or researchers design and implement knowledge translation interventions to 'translate' evidence to health professionals and, in doing so, frame learning as passive (Poole, 2008). Second, knowledge translation is framed as a linear process that is disembodied from the local context (often referred to simply as the 'implementation setting') (Kitson, 2008). This presumes that simply communicating research evidence to clinicians through some form of continuing education is sufficient to change practice and ignores context-specific influences on the knowledge translation process, such as local professional cultures or institutional constraints (Kitson, 2008). As Kitson (2008) argues, this dynamic reflects the predominance of epistemic frames, such as planned action theory, grounded in positivism within the knowledge translation field.

Conversely, continuing education in the health professions is situated within the domain of adult education, which draws upon constructivism. This epistemological paradigm considers 'knowledge' and 'evidence' to be 'constructed' – that is, non-objective, context-dependent and constructed by individuals through the larger process of meaning-making (Terwel, 1999). Within this context, health professionals 'negotiate' knowledge and evidence through social interactions (inclusive of interactions with educators), as well as through their lived experience and social and structural influences on their lives (Cornelissen et al., 2011; Terwel, 1999). While this dynamic underscores the epistemological tension between those designing and implementing knowledge translation interventions, health systems nonetheless privilege the 'knowledge', 'evidence', and, therefore, 'authority' of researchers. Beyond reinforcing the dominance of particular ways of knowing in health care settings by setting out what 'counts' as knowledge and evidence, this dynamic also has the effect of marginalizing the potential contributions of adult learning theory to the knowledge translation process.

Therein lie several challenges for clinical educators. First, the positivism embedded within knowledge translation limits opportunities for clinical educators to meaningfully integrate theory into continuing education activities undertaken as part of

knowledge translation interventions. Indeed, as Davies and colleagues (2003) note, less than 10% of studies focusing on the implementation of evidence-based practice guidelines report that they draw on adult learning theory to inform learning design and facilitation. Even then, these studies have not meaningfully described how adult learning theory informed these interventions (Davies, Walker, & Grimshaw). Second, positivist assumptions underlying knowledge translation have the potential to marginalize the experiential knowledge of health professionals by minimizing the role of their understandings and lived experiences in shaping clinical practice (Cornelissen et al. 2009; Reimer-Kirkham et al., 2009). This underscores the importance of considering how 'evidence' is communicated to health professionals, and how their understandings of 'evidence' influence clinical practice. Finally, while researchers in continuing education in the health professions emphasize the critical role of reflexivity in structuring clinical practice (Johns & Freshwater, 2009), knowledge translation interventions often position 'evidence' as authoritative. In doing so, these interventions subordinate critical reflection to 'compliance' with evidence-based recommendations by defining 'success' only in terms of outcomes rather than in regards to process and critical analysis of evidence. Collectively, these challenges highlight the urgent need to consider how tensions between positivist and constructivist (or interpretive) viewpoints influence knowledge translation interventions and what counts as evidence in evidence-based practice.

These dynamics also point to the need to consider the potential merits of adult learning theory in informing the knowledge translation process, as well as serving as a corrective to the discontinuities between how knowledge translation interventions are framed and how adults learn. Here, it is of critical importance that 'knowledge' and 'evidence' in the context of the knowledge translation process are problematized and more attention is paid to how clinicians engage with these concepts. Key pillars of adult learning theory are of particular relevance to clinicians, generally, and knowledge translation interventions, specifically. These pillars are firmly rooted in constructivist traditions in which learners – in this case, clinicians – accommodate new knowledge to make changes to their daily practices and only serve to further underscore possible discontinuities with positivist knowledge translation interventions (Thomas et al., 2014).

Of particular importance is the role of experiential learning in clinical training and continuing education in the health professions (Maudsley & Strivens, 2000; Rolfe & Sanson-Fischer, 2001), and its alignment with how adult learners learn new information and translate it into clinical practice (Teunissen et al., 2007). Kolb's experiential learning cycle has proven instructive in advancing the importance of experiential learning in the health professions, and consists of four stages: a) gaining a new experience (concrete experience); b) critically reflecting on that experience (reflective observation); c) constructing an understanding of that experience (abstract conceptualization); and, d) planning and ultimately changing practices based on critical reflection (active experimentation) (Kolb, 2014). This process reflects the constructivist tradition of adult education insofar as learners – in this case, clinicians – come to understand their experiences through critical reflection. If the evidence is persuasive and resonates with their personal experiences, only then do they make changes to practices to incorporate these new understandings. While this approach has become increasingly instrumental in undergraduate clinical education (Aronson et al., 2011; Hoover, Wong, & Azzam, 2012; Maudsley & Strivens, 2000), it has not consistently informed knowledge translation interventions despite its potential to bring promising new healthcare practices and local knowledge and experience into alignment.

Moreover, the central role of critical reflection in changing practice is further supported by the extensive literature outlining the place of transformative learning in adult education (Baumgartner, 2001; Merizow, 1991; Merizow, 1997). Transformative learning is a process through which changes in 'frames of reference' are effected (Merizow, 1991; Merizow, 1997). These frames of references constitute the lived experiences of adult learners – in this case, clinicians – inclusive of values, feelings, and conditioned responses. In turn, individual practices, such as habits and routine practices, are structured by these frames of reference, and ideas or experiences that do not fit within them are viewed as aberrant (Baumgartner, 2001; Merizow, 1997).

Aligned with experiential learning processes, transformational learning theory seeks to describe how these frames of reference are transformed through the questioning of assumptions, which prompts action to incorporate new knowledge. Here, critical reflection is positioned as a process through which assumptions are identified

and questioned, and practices are transformed in the creation of new understandings (Carroll, 2010). Transformative learning theory is consistent with the goals of knowledge translation because it too seeks to prompt changes to existing practices – in this case, the adoption of new clinical practices. However, transformative learning theories have also not informed knowledge translation interventions in a meaningful way. Collectively, this failure to integrate adult learning theory into knowledge translation interventions means that educational activities are unlikely to successfully effect desired, and often-necessary changes in health care practice.

By unpacking individual as well as social and institutional factors that shape learning experiences, processes, and environments in relation to knowledge translation interventions, this thesis will generate insights into how ‘evidence’ and ‘knowledge’ are positioned and understood by health professionals within the broader context of their lived experiences. As a consequence, this thesis has the potential to ‘re-evaluate’ knowledge and evidence to reconcile (to some degree) or make clear how these epistemological discontinuities within knowledge translation interventions influence the uptake of new clinical practices. In doing so, this thesis has the potential to foster insights into the ways in which adult learning theory, including experiential and transformational learning, can be employed to optimize the knowledge translation process and better align it with the learning needs and environments of clinicians.

1.2 Interventional context: Focus on hospital settings

Hospital care is among the most commonly used forms of care. While national data is unavailable in Canada, the United States Centers for Disease Control (CDC) reports that Americans visit hospital more than 1 billion times annually (Schappert & Rechtsteiner, 2008). Hospitals operate under the expectation that they are providing evidence-based care. However, there is strong evidence that they are among the slowest health care settings to integrate evidence-based recommendations into clinical care (Doran & Sidani, 2007; Hedges, 2007; Lang et al., 2007). While acknowledging that social and structural forces far beyond the control of individual hospital staff limit their capacity to integrate evidence-based recommendations into clinical practice,

policymakers, health planners, health educators, and health care practitioners share a commitment to ensuring that hospital care is aligned with research evidence.

Knowledge translation interventions are central to strategies to encourage the uptake of evidence-based practice recommendations in hospital settings (Pronovost et al., 2008; Straus, Tetroe, & Graham, 2011). Hospitals have long provided continuing education opportunities to health care professionals, which they are required to complete to meet continuing education requirements of their regulatory colleges. However, knowledge translation interventions are distinct from conventional continuing education activities, in that the former seek to provide targeted 'knowledge' or 'objective scientific evidence' with the goal of improving specific clinical or patient care outcomes (McWilliam, 2007). For example, hospitals commonly implement knowledge translation interventions to support the implementation of new evidence-based clinical practice guidelines – that is, care guidelines developed by professional organizations, such as the Registered Nurses Association of Ontario or Joanna Briggs Institute, or content experts based on systematic reviews of the research literature. These interventions mobilize diverse continuing education activities to support health care professionals in implementing these guidelines and thus produce improvements in relevant clinical or patient outcomes. While not always, these knowledge translation interventions are often implemented in collaboration with researchers or evaluation specialists, who evaluate the 'success' of these interventions by conducting practice audits and analyzing clinical and patient outcomes data. Hundreds of studies have been published in peer-reviewed journals in the past decade reporting the impacts of such knowledge translation interventions (Gagnon et al., 2014; Jones, Roop, Pohar, Albrecht, & Scott, 2014; Yost et al., 2014), and hospitals are often quick to advertise their successes in improving clinical practice.

As previously noted, however, there is growing awareness that knowledge translations are unable to produce complete compliance with evidence-based practice recommendations. In turn, researchers have increasingly mobilized diverse qualitative methods in an effort to generate insights into why this is so, focusing in particular on individual, inter-professional, and institutional dimensions of the uptake of research evidence-based practices in hospital settings. Although previous studies have focused

on knowledge translation interventions undertaken in specific situations or institutional contexts, there remains a need to better understand factors influencing knowledge translation interventions across hospital settings. This is a critical step toward improving educational activities pursuant to the goal of improving hospital care, as well as aligning interventions and continuing education activities with the needs and experiences of health professionals. This is of critical importance, given the significant role of hospitals in providing patient care across the life course.

For the reasons outlined above, the goal of this thesis is to synthesize the qualitative literature on knowledge translation interventions in hospital settings. This thesis focuses on knowledge translation interventions implemented in hospitals in Organisation for Economic Co-operation and Development (OECD) countries (for example, Canada, United States, United Kingdom) for several important reasons. First, the literature on knowledge translation interventions implemented in hospital settings is largely based on research undertaken in OECD countries, namely Canada, Australia, United States, and United Kingdom. Second, contextual forces shaping hospital care services vary considerably between high-income OECD countries and low-income countries due to inequities in the availability of resources, among other factors. This means that key contextual factors influencing research adoption in these countries, such as funding availability and the out-migration of health care professionals, make comparisons with OECD countries impossible. Finally, while the organization of health care systems varies nationally and internationally (public vs. private), previous review papers have underscored how social-structural influences occurring across OECD, such as education and staffing and the availability of resources, make comparison possible due to similarities in contextual forces across care settings in these countries (Chopra, Munro, Lavis, Vist, & Bennett, 2008; Suhrcke & de Paz Nieves, 2011).

1.3 Study Objectives

The overall aim of this thesis is to employ qualitative synthesis methods to explore how influences on learning processes and environments in relation to knowledge translation interventions shape the adoption of evidence-based practice recommendations in hospital settings. Specifically, I aim to: (i) synthesize the qualitative

literature exploring the uptake of evidence-based practice recommendations in hospital settings; (ii) conceptualize how individual, inter-professional, and institutional factors influence learning processes and environments and, in turn, the adoption of evidence-based practice recommendations in hospital settings; and, (iii) identify future directions for research, policy and practice with the potential to optimize the implementation of evidence-based practice recommendations and reduce the knowledge to practice gap. Collectively, these objectives will address the existing gap in the literature in regards to how influences on the adoption of evidence-based practice recommendations are understood. These objectives will be met through the completion of a systematic review and qualitative meta-synthesis of the peer-reviewed, qualitative literature exploring the implementation of knowledge translation interventions in hospital settings. The specific objectives of this thesis are as follows:

- 1. To use novel methods to synthesize the qualitative literature exploring the uptake of evidence-based practice recommendations in hospital settings.** Chapter 2 outlines the methodological approach employed to synthesize the qualitative literature on the implementation of knowledge translation interventions and adoption of evidence-based practice recommendations in hospital settings. I will argue that this approach is novel because it compares qualitative studies across settings and interventions allowing for a greater degree of abstraction than is capable within the context of any individual study.
- 2. To outline individual, inter-professional, and institutional influences on learning processes and environments in hospital settings and their role in shaping the adoption of evidence-based practice recommendations.** In Chapter 3, I outline synthesis findings by exploring individual, inter-professional, and institutional influences on learning processes and environments in relation to the implementation of knowledge translation interventions. This chapter also explores how these influences shape the adoption of evidence-based practice recommendations among clinicians in hospital settings, as well as how these relate to adult learning theory. **In particular, this chapter builds upon the existing literature by outlining how clinicians problematize ‘knowledge’ and ‘evidence’.**
- 3. To identify future directions for research, policy and practice with the potential to optimize the implementation of evidence-based practice recommendations**

and reduce the knowledge to practice gap. Chapter 4 outlines the research, policy, and practice implications of findings regarding individual, inter-professional, and institutional influences on the adoption of evidence-based practice recommendations in hospital settings. This chapter discusses the importance of the conceptual model advanced in Chapter 3 for future knowledge translation interventions. Finally, this chapter provides an overview of gaps in the existing literature that warrant further attention, focusing on the need for increased information and transparency in the research literature regarding theories of adult learning that guide Knowledge Translation activities, including training curricula and facilitation methods.

1.4 Conclusion

Synthesizing the qualitative literature on the implementation of knowledge translation interventions in hospital settings represents a critical step toward generating insights that can reduce the research-to-practice gap in hospital care and hopefully to improve patient outcomes. While systematic reviews and meta-analyses of quantitative and clinically-oriented research on knowledge translation are more common, the qualitative literature on knowledge translation interventions represents an important, if neglected, avenue for understanding individual and contextual influences on learning processes and environments in relation to knowledge translation interventions. Perhaps more importantly, focusing on research that attends to the experiences of clinicians will further ensure that these experiences form the basis of recommendations to improve the knowledge translation process.

Chapter 2.

Methods

This thesis uses qualitative meta-synthesis methods to explore how learning processes and environments shape the implementation and uptake of evidence-based recommendations among nurses and physicians in hospital settings. This focus is operationalized through an examination of three interconnected dimensions of knowledge translation: individual experiences and understandings of knowledge translation, inter-professional issues and social processes related to implementation, and institutional factors and structural contexts of implementation. As outlined in Chapter 1, this synthesis focuses on hospital settings, specifically, due to their ongoing challenges in integrating research into practice and the potential of improvements in knowledge translation to strengthen hospital care. Qualitative meta-synthesis methods constitute an emerging approach to reviewing qualitative literature that aim to advance beyond narrative reviews through the application of analytical procedures that involve systematically comparing and synthesizing findings across multiple qualitative studies (Noblit & Hare, 1988; Walsh & Downe, 2005; Zimmer, 2006). Qualitative meta-syntheses thus seek to develop higher order constructs *from* the relevant research that generate more powerful understandings of experiences or social processes (in this case, knowledge translation processes in hospitals) than is possible by analyses of individual or stand alone studies (Noblit & Hare, 1988). In doing so, qualitative meta-syntheses have significant potential to facilitate the development of conceptual understandings of experiences and processes that can push the boundaries of current understandings and identify avenues for future research and intervention (Noblit & Hare, 1988; Walsh & Downe, 2005).

Qualitative meta-synthesis approaches have garnered criticism, primarily due to the concerns that context-specific studies from different methodological traditions cannot

be compared or more broadly generalized (Walsh & Downe, 2005) and that the richness of individual studies is lost during the synthesis process (MacLure, 2005). These criticisms, at best, overlook and, at worst, mischaracterize the objective of qualitative meta-syntheses. First, qualitative meta-synthesis approaches recognize that, while qualitative studies draw upon diverse methodological approaches (often with distinct epistemological assumptions), they are interpretive insofar as they seek to understand and explicate some dimension of human experiences or social processes (Jensen & Allen, 1996). In this regard, qualitative meta-synthesis approaches make researchers' interpretations, findings or results, the unit of analysis, thus offering more complete understanding of the meanings of these experiences or processes (Jensen & Allen, 1996). This approach further diverges from conventional literature reviews through the incorporation of more rigorous analytical techniques. Second, rather than seeking to produce 'generalizable' knowledge, qualitative meta-syntheses approaches seek to generate more nuanced understandings of specific experiences or processes occurring across diverse contexts, often with the explicit goal of addressing research-to-practice gaps and informing future inquiry (Walsh & Downe, 2005), which align to the goals of the present study. Meta-synthesis methods have thus gained increased acceptance in the health sciences and continuing health professions education as a crucial tool in illuminating the dynamics that shape specific experiences or social processes by leveraging the collective findings produced across multiple studies (Bearman & Dawson, 2013; Paterson & Canam, 2001; Thorne, Jensen, Kearney, Noblit, & Sandelowski, 2004) and, in doing so, serve to make the insights of qualitative research more accessible to decision-makers (Walsh & Downe, 2005).

This approach is most prominent within the health sciences and continuing health professions education (Edwards, Davies, & Edwards, 2009; McCormack, Karlsson, Dewing, & Lerdal, 2010; Noyes & Popay, 2007), where the demands of clinical care and disciplinary biases often preclude engagement with the qualitative literature among decision-makers (Bearman & Dawson, 2013). It is worth noting that this approach is also gaining increased acceptance as an important method within the field of education, where it has been employed in relation to such topics as influences on the effectiveness of problem-based learning (Strobel & van Barneveld, 2009) and co-teaching in classrooms (Scruggs, Mastropieri, & McDuffie, 2007).

Qualitative meta-synthesis approaches draw upon a range of methodological traditions and epistemological traditions, including, in the case of realist synthesis reviews, positivist research paradigms. However, the most widely adopted approaches are closely aligned with grounded theory (Bearman & Dawson, 2013; Thomas & Harden, 2008), an inductive approach within the social sciences that seeks to generate new theory to explain experiences and social processes (Charmaz, 2014; Strauss & Corbin, 1990). In this regard, qualitative meta-syntheses typically characterize studies included in syntheses as ‘data’, and seek to generate new descriptions and theory based on inductive analyses of their findings. Analytical procedures operate in a similar manner to constant comparative methods, in that they seek to generate analytic categories such as codes and themes, inductively through engagement with the ‘data’, and then draw upon conflicting data to interrogate these meanings and revise categories to yield more fine-grained findings. Throughout this process, reviewer assumptions and decisions are documented and reflected upon so that the basis for interpretation is as transparent as possible, thus supporting the trustworthiness of the analyses (Charmaz, 2014). Ultimately, the goal of the meta-synthesis, as in grounded theory (Charmaz, 2014; Strauss & Corbin, 1990), is to develop a more robust understanding of specific experiences or social processes in particular contexts – in this case, the role of individual, inter-professional, and institutional influences in shaping the adoption of evidence-based practice recommendations in hospital settings.

2.1 Search Strategy

A systematic literature search strategy was implemented to identify qualitative research articles that examine factors that influence nurses and doctors’ adoption of evidence-based research in hospital settings. Of particular interest were studies exploring how learning processes and environments influenced the uptake of evidence-based recommendations. As outlined in Table 1, I generated a list of keywords to facilitate a systematic search to retrieve relevant articles. These keywords were grouped into three categories: (1) intervention; (2) method; and, (3) setting. While systematic literature searches conventionally only rely upon academic databases, more comprehensive strategies are needed to capture qualitative articles, which often appear

in journals that are not indexed in health sciences academic databases. To this end, the following steps were undertaken to ensure that the largest possible sample of studies were identified:

Table 1. Search variables for systematic literature search

Intervention		Method		Setting
Knowledge translation Knowledge exchange Knowledge management Knowledge transfer Evidence-based* practice guidelines*	AND	Qualitative *interviews Focus groups Case study Ethnography Ethnographic Participant-observation Naturalistic observation	AND	Hospital Clinic Ward Unit

1. **Academic Databases** - Citations were retrieved from academic databases using keywords that reflected the review topic and qualitative methods (see Table 1). Three academic databases widely viewed as the primary databases in the health sciences used in this systematic literature search: i) Medline, a health sciences index compiled by the United States National Library of Medicine that includes more than 5000 journals and is searchable through the Pubmed database; ii) the Cumulative Index to Nursing and Allied Health Literature, a nursing and health sciences index that includes more than 4500 journals and is searchable through the Ovid database; and, iii) Scopus, a bibliographic database that encompasses the health sciences, social sciences, and education literature and is searchable through Ebsco. A preliminary search was undertaken of the Education Resources Information Center (ERIC) database, which indexes educational research, but did not return sufficient results to warrant the execution of the complete list of search variables.
2. **Hand-searching journals** - Selected journals with a reputation for publishing articles on knowledge translation research and interventions were hand-searched, including *Implementation Science*, *BMC Health Services*, *BMC Medical Education*, *Milbank Quarterly*, *Medical Education*, and *Academic*

Medicine. All issues published since 2000 were retrieved and reviewed to identify relevant citations and abstracts.

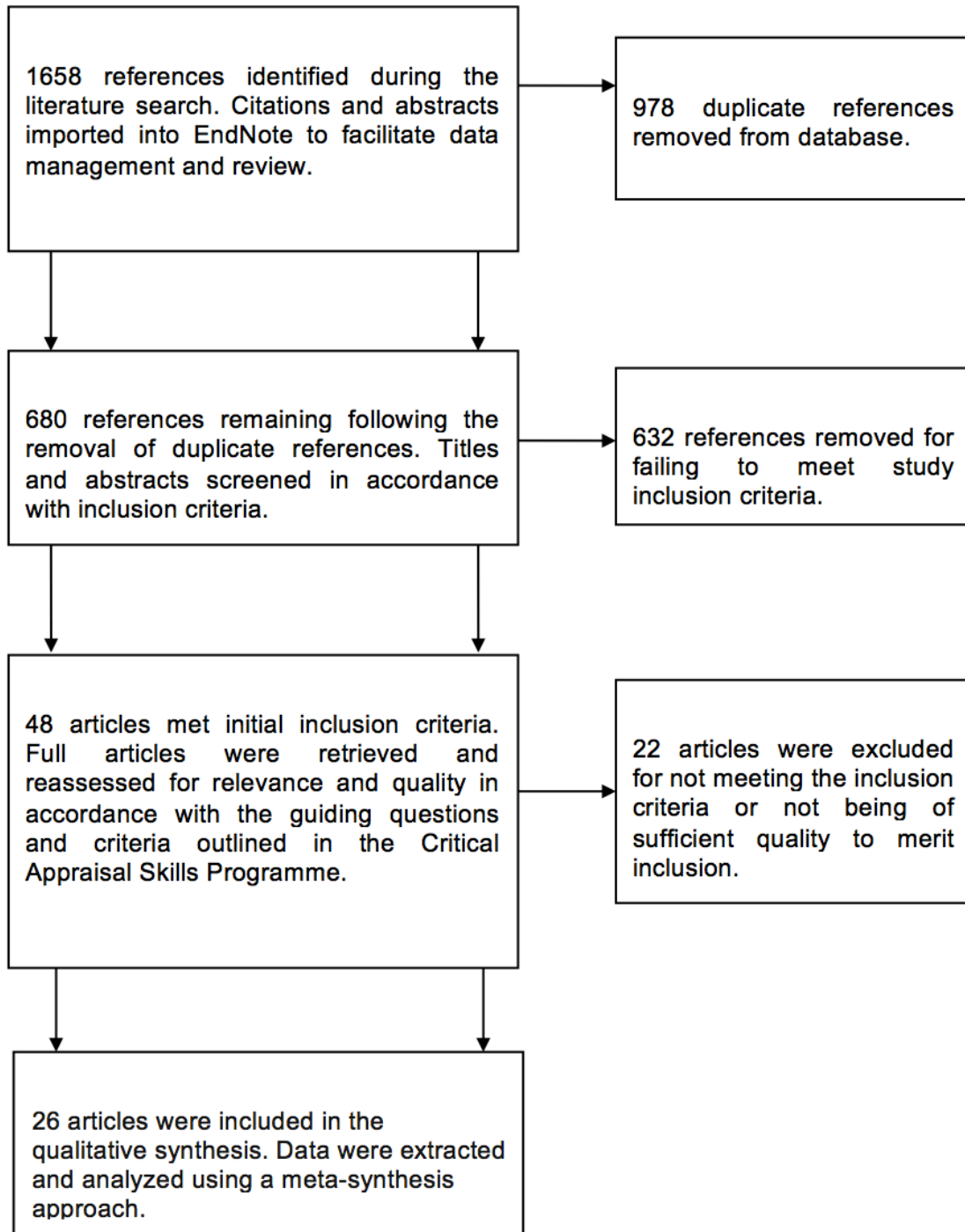
3. **Google Scholar** – Advanced functions of Google Scholar were used to identify additional citations that were potentially relevant to the search criteria. Keywords were used to execute Google Scholar searches (see Table 1, p. 30). These searches were reviewed to identify articles of potential relevance to this synthesis. Google Scholar citation information was also used to identify potentially relevant articles citing key texts in the knowledge translation literature (see, for example, Davis et al., 2003; Graham et al., 2006; Logan & Graham, 1998). These texts were primarily highly cited articles that included frameworks used in the implementation and evaluation of knowledge translation interventions (for example, the Ottawa Model of Research Use). In addition, the ‘related articles’ function in Google Scholar was used to retrieve additional citations of potential relevance to this qualitative synthesis. This function allows for the identification of articles similar to the selected citation through the selection of a link (titled “Related Articles”) in Google Scholar.
4. **Reference lists** – The reference lists of key articles within the knowledge translation literature were reviewed to identify articles that were potentially relevant to this review. These key articles were highly cited articles reporting qualitative findings relating to knowledge translation interventions.

Citations and abstracts for 1658 articles were retrieved during the literature search and imported into Endnote, a citation management software package, to help facilitate data management, eligibility screening, and article retrieval (see flowchart in Figure 1, p. 33). 680 articles remained following the removal of duplicate citations. The high number of duplicates reflects the fact that many journals were indexed in multiple academic databases.

2.2 Inclusion and exclusion criteria

Inclusion and exclusion criteria were applied by reviewing the citations and reading the abstracts in the preliminary screening process. This helped to identify articles of potential relevance to this qualitative synthesis. The inclusion criteria were: qualitative methods; English-language article; publication in a peer-reviewed journal; report perspectives and experiences of nurses or physicians primarily in clinical roles (non-managerial roles); focus on experiences with knowledge translation interventions or in implementing evidence-based practice recommendations; research was undertaken primarily in a hospital setting (for the purpose of this synthesis, hospitals were considered to be in-patient health care facilities providing acute or rehabilitative care); and, research undertaken in an OECD country. The exclusion criteria were: quantitative research; opinion articles, commentaries, and editorials; literature reviews; non-English language articles; research undertaken in non-OECD countries; and, articles published prior to 2000. A decision was made to exclude articles published prior to 2000 out of recognition that the institutionalization of knowledge translation by the Canadian Institutes of Health, National Institutes of Health (United States), Royal Society (United Kingdom), and other funding agencies was not firmly established until this time. Articles published based on research undertaken in countries outside the OECD were similarly excluded for reasons of comparability and context described in Chapter 1. Finally, while acknowledging that physicians and nurses have distinct clinical responsibilities and there are differences in decision-making power within and between these groups, I decided to include both groups in this synthesis because: (1) knowledge translation interventions are commonly multidisciplinary and involve both physicians and nurses; and, (2) both nurses and doctors work together in patient care and shape the context for knowledge translation; and, (3) qualitative research (particularly ethnographic) exploring the implementation of knowledge translation interventions often includes both groups. (non-managerial roles); focus on experiences with knowledge translation interventions or in implementing evidence-based practice recommendations; research was undertaken primarily in a hospital setting (for the purpose of this synthesis, hospitals were considered to be in-patient health care facilities providing acute or rehabilitative care); and, research undertaken in an OECD country. The exclusion criteria were: quantitative research; opinion articles, commentaries, and editorials; literature reviews; non-English language

Figure 1. Flowchart of meta-synthesis



articles; research undertaken in non-OECD countries; and, articles published prior to 2000. A decision was made to exclude articles published prior to 2000 out of recognition that the institutionalization of knowledge translation by the Canadian Institutes of Health, National Institutes of Health (United States), Royal Society (United Kingdom), and other funding agencies was not firmly established until this time. Articles published based on research undertaken in countries outside the OECD were similarly excluded for reasons of comparability and context described in Chapter 1. Finally, while acknowledging that physicians and nurses have distinct clinical responsibilities and there are differences in decision-making power within and between these groups, I decided to include both groups in this synthesis because: (1) knowledge translation interventions are commonly multidisciplinary and involve both physicians and nurses; and, (2) both nurses and doctors work together in patient care and shape the context for knowledge translation; and, (3) qualitative research (particularly ethnographic) exploring the implementation of knowledge translation interventions often includes both groups.

Forty-eight articles met the initial inclusion criteria. This was determined by reading the abstracts of all of the identified studies. As is typical of systematic reviews and qualitative syntheses (see, for example, Baxter et al., 2012; Embuldeniya et al., 2013; Koshodo et al., 2015), a high proportion of citations were excluded following preliminary citation and abstract screening. In the context of this synthesis, the reason for this was twofold. First, several academic databases lacked the option to exclude commentaries, editorials, case reports, published conference abstracts, and other items from searches, which meant that many non-qualitative citations were retrieved when executing the search strategy. Second, specific keywords, such as 'interviews', yielded a large number of citations for questionnaire-based clinical and epidemiological studies, which are not included in meta-syntheses of qualitative research.

The included forty-eight articles were reassessed for relevance and methodological rigor by using the Critical Appraisal Skills Programme (CASP) (Programme, 2014), a tool for evaluating qualitative research. This tool is comprised of ten questions intended to facilitate the appraisal of the methodological rigor of articles reporting qualitative research, and is widely used in qualitative syntheses undertaken in health sciences fields (see for example, Campbell et al., 2003; Walter, Emery,

Braithwaite, & Marteau, 2004). The CASP tool has garnered criticism because, unlike the Joanna Briggs Institute Tool and the Evaluation Tool for Qualitative Studies, it does not include questions on the theoretical orientation or interpretive validity of the articles (Hannes, Lockwood, & Pearson, 2010). However, it was determined to be the best tool for the present review for several reasons. First, qualitative studies of knowledge translation interventions are commonly published in general and specialist medical journals whose strict word counts and journal aims place limits on authors' ability to incorporate and develop theory. In turn, because so many articles published in this area rarely address theory, potentially excluding articles on the basis of theoretical shortcomings would drastically limit the sample, and thus overall scope of the synthesis review. Second, as outlined by Dixon-Woods and colleagues (2006), qualitative syntheses are strengthened when authors exercise appropriate critical judgment during quality assessment and prioritize the relevance of articles to the synthesis review topic over theoretical or methodological shortcomings. This is of particular importance in the health sciences and continuing health professions education literature where varying disciplinary norms (particularly in the 'applied' health sciences) and strict word limits preclude the inclusion of detailed descriptions of the theoretical approaches and procedures in qualitative studies.

Twenty-six of the forty-eight articles were excluded following further reading and screening using the CASP tool. Articles that were excluded at this stage were determined to lack relevance to the overall review synthesis objectives or to have major methodological shortcomings. Articles excluded for lacking relevance to the synthesis review objectives generally reported on interventions or studies undertaken in non-hospital settings. Articles excluded on the basis of methodological concerns typically reported findings from mixed methods studies. Most of these articles did not sufficiently describe the qualitative component of the study, thereby making it impossible to evaluate the methodological rigor of the studies. However, the larger concern with these studies was that they contained only minimal participant data and generally quantified qualitative findings as opposed to outlining experiences implementing evidence-based practices in a meaningful way.

2.3 Description of Articles

Twenty-six articles were included in this synthesis that included an aggregate number of more than 750 participants. Articles were based on data collected in Canada (n=9), Australia (n=6), the United Kingdom (n=5), the United States (n=4), and other countries (n=2). One article reported on data collected as part of a multi-site study undertaken in both Canada and the United States. Nine articles were based on studies comprised entirely of nurses, while seven articles were based on studies that included only physicians or medical residents, who are trained physicians completing post-graduate medical training. The remaining articles reported studies that included participants from a range of professional roles, including but not limited to physicians, nurses, health administrators, program coordinators, educational consultants, and volunteer coordinators. However, in these cases, nurses and physicians constituted the primary participant groups. While the majority of articles reported on studies undertaken in hospital settings only (n=23), three studies reported on interventions or evidence-based recommendations that also involved community-based health care settings, such as interventions focusing on improving discharge planning or care transitions. However, these studies were primarily focused on dynamics within hospital settings and thus relevant to this synthesis. Most articles (n=22) reported on research undertaken in settings with public health insurance and government-run health care. Patient-level financial barriers, such as insurance status, were thereby unlikely to influence the implementation of interventions. The remaining studies were undertaken in settings with a mixture of public and private health care options, although limited information was provided in these articles regarding potential influences of patient-level financial barriers. 19 articles were evaluations of influences on the uptake of specific knowledge translation interventions or evidence-based practice recommendations in clinical settings, which ranged from neonatal to surgical to geriatric interventions. The remaining articles examined more general experiences with the implementation of knowledge translation interventions and evidence-based practice recommendations. Table 2 provides an overview of the key characteristics of the articles included in this synthesis.

Table 2. Details of retrieved articles (listed chronologically)

Reference	Country	Aims	Setting	Sample (professional background)	Methods
Summerskill & Pope, 2002	United Kingdom	To explore attitudes toward coronary heart disease and factors influencing the adoption of practice guidelines	Hospitals	14 participants (all physicians)	Interviews Focus groups
Angus, Hodnett, & O'Brien-Pallas, 2003	Canada	To describe the implementation of evidence-based intervention in two intrapartum nursing units	Intrapartum nursing units at two hospitals	Unspecified	Ethnography
Bhandari et al., 2003	Canada	To examine barriers to implementing evidence-based medicine among surgical trainees	Surgical units at a teaching hospital	28 participants (all surgical residents)	Focus groups Interviews
Bradley, Schlesinger, Webster, Baker, & Inouye, 2004	United States	To describe factors facilitating or impeding the implementation of an evidence-based intervention in hospital setting.	Nine hospitals participating in intervention	32 participants (8 physicians, 14 nurses, 5 intervention coordinators, 4 volunteer directors, 1 performance improvement coordinator)	Interviews
Graham, Logan, Davies, & Nimrod, 2004	Canada	To explore factors shaping the introduction of a fetal health surveillance guideline.	Two tertiary hospitals and one community hospital	59 participants (51 nurses, 8 nurse administrators or nurse educators)	Focus groups & interviews
Majumdar, Simpson, & Marrie, 2004	Canada	To identify barriers to physician adoption of evidence-based intervention for community-acquired pneumonia across four hospitals.	Two tertiary hospitals and two community hospitals	10 participants (all physicians)	Interviews
Bradley, Webster, Baker, Schlesinger, & Inouye,	United States	To examine factors influencing sustainability in the translation of	Thirteen hospitals	42 participants (15 nurses, 8 physicians, 8	Interviews

Reference	Country	Aims	Setting	Sample (professional background)	Methods
2005		the Hospital Elder Life Program (HELP) into hospital settings.		intervention coordinators, 7 health administrators, and 4 volunteer coordinators)	
Lorenz et al., 2005	United States	To examine the strategies used by physicians to obtain evidence and compare these to those of physician managers.	Community hospitals and other health care settings	35 participants (all physicians, including primary care providers and managers)	Focus groups
Perry, 2006	Australia	To examine the approaches used to promote evidence-based practice in acute stroke units.	12 acute care hospitals and nine academic units	Unspecified	Focus groups & interviews
Chaillet et al., 2007	Canada	To investigate barriers and facilitators experienced by obstetricians in implementing clinical practice guidelines for managing labour and vaginal birth.	Neonatal care units in three hospitals	27 participants (all obstetricians)	Focus groups & interviews
Raja et al., 2008	Australia	To explore views and practices following the implementation of a malnutrition screening tool in acute care wards.	Four acute care wards in three hospitals	54 participants (all nurses)	Focus groups
Porter, Raja, Cant, & Aroni, 2009	Australia	To explore barriers to complying with recommendations for implementing a malnutrition screening tool.	Acute care wards in two hospitals	18 participants (all nurses)	Focus groups
Hayes et al., 2010	Canada	To examine barriers to the implementation to consensus guidelines for nonvariceal upper gastro-intestinal bleeding.	Three community-based and three academic hospitals	22 participants (13 physicians, 6 nurses, 3 program directors)	Interviews

Reference	Country	Aims	Setting	Sample (professional background)	Methods
Gerrish et al., 2011	United Kingdom	To identify the approaches taken by nurses to promote evidence-based practice	Hospital across seven health authorities	23 participants (all nurses)	Observation & interviews
Johnston, Young, Grimmer-Somers, Antic, & Frith, 2011	Australia	To examine perspectives regarding the implementation of six evidence-based recommendations for managing COPD	Unspecified number of hospitals	16 participants (all physicians)	Interviews
Kitto, Petrovic, Gruen, & Smith, 2011	Australia	To explore cultural factors shaping the implementation of evidence-based practices for surgical practice.	Unspecified number of hospitals (affiliated with an academic hospital)	22 participants (all surgeons)	Interviews
Robert, Morrow, Maben, Griffiths, & Callard, 2011	United Kingdom	To explore why and how evidence-based recommendations are integrated into nursing practice.	Hospitals and primary care organizations	55 interviews with an unspecified number of participants (all nurses)	Interviews
SteelFisher, Martin, Dowal, Inouye, & Md, 2011	United States & Canada	To explore the strategies used to justify evidence-based practice to decision-makers.	Nineteen academic or community-based hospitals	62 participants (12 administrators, 8 physicians, 4 program directors, 20 elder life specialists, 18 elder life nurse specialists)	Interviews
Swennen, van der Heijden, Blijham, & Kalkman, 2011	The Netherlands	To explore the influence of career stage shapes on perceptions of barriers to practicing evidence-based medicine.	One academic and one general hospital	12 participants (all physicians)	Interviews
Thompson & Kagan, 2011	United States	To describe barriers to the adoption of evidence-based	Five nursing units across two acute and	17 participants (all nurses)	Observation & interviews

Reference	Country	Aims	Setting	Sample (professional background)	Methods
		practice for fever management.	critical care hospitals		
Bennetts, Campbell - Brophy, Huckson, & Doherty, 2012	Australia	To explore evidence-based pain management practices in emergency departments	Emergency departments in six hospitals	47 participants (physicians and nurses)	Focus groups
McInally, Masters, & Key, 2012	United Kingdom	To examine how pediatric oncology education impacts clinical nursing practice.	Hospital wards (pediatric oncology, pediatric) and community health setting	7 participants (all nurses)	Interviews
Thurston & Waterworth, 2012	New Zealand	To explore the experiences of nurses with the implementation of a care intervention for dying patients.	Tertiary teaching hospital	15 participants (all nurses)	Focus groups & interviews
Ireland et al., 2013	Canada	To explore the 'real world' implementation of evidence-based recommendations for fall prevention in acute care hospitals.	Two multi-site academic teaching hospitals and one community hospital	95 participants (all nurses)	Focus groups & interviews
Ladak et al., 2013	Canada	To examine the integration of pain resource nurses into hospital care, with an emphasis on the resources needed to sustain this professional role.	Academic teaching hospital	21 participants (all pain resource nurses)	Focus groups
Chouliara, Fisher, Kerr, & Walker, In press	United Kingdom	To explore factors that facilitate or impact the implementation of a stroke Early Support Discharge service	Two acute care hospitals	35 participants (various hospital staff positions)	Interviews

2.4 Analytic Strategy

The goal of the analytic strategy was to synthesize the included articles to develop insights into how learning processes and environments influenced the integration of evidence-based recommendations into clinical practice. All articles meeting the eligibility criteria following screening were imported into NVivo (Mac version), a qualitative analysis software program, to facilitate data management and coding. First, articles were read multiple times to strengthen familiarity with their content and identify on a preliminary basis key themes within the articles related to features of the learning environment and learning interactions. In doing so, I noted that there were no substantive differences in influences on the implementation of evidence-based recommendations among these nurses and physicians outside of power differentials between them. I, therefore, used the term ‘clinicians’ in analyzing participant experiences and identify them as such in Chapter 3 unless a specific practice group is noted.

Similar to approaches taken within grounded theory, the key themes emerging from within this initial indexing of the sample of included articles were assigned to codes, (termed ‘nodes’ within NVivo) to facilitate more in-depth analysis during the synthesis review. In this case, I operationalized my analysis of the role of learning environments and learning processes in shaping knowledge translation processes by focusing on their individual, inter-professional, and institutional dimensions. These dimensions of learning processes and environments were identified as most relevant to the thematic content of the included articles during the preliminary analyses, as well as the overall objectives of this meta-synthesis, and provided a framework for this synthesis also likely to be of greater utility to clinicians. The individual themes were then synthesized by drawing upon the meta-ethnographic approach outlined by Noblit and Hare (1988). This draws on analytical procedures aligned with grounded theory approaches (Charmaz, 2014; Strauss & Corbin, 1990), wherein researchers undertake a three-step process that includes the following.

- 1) *Reciprocal translational analysis* – Reciprocal translation involves using analytic techniques to identify how themes occurring across the articles are related (Atkins et al., 2008; Noblit & Hare, 1988). During this stage, concepts,

metaphors, and themes emerging are compared to identify points of convergence across the included articles. In the case of the current synthesis, this meant extracting data assigned to the codes created during the previous indexing of the articles within NVivo to identify similarities and create new codes that corresponded to the new, emergent themes. Relevant coding categories – that is, nodes – were then merged within NVivo to develop new codes that corresponded to themes emerging across included studies. These codes were organized across their Individual, Inter-professional, and Institutional domains to organize these thematic categories in a manner that reflected the content of the included articles. Meanwhile, disconfirming or conflicting codes were organized under sub-codes within the larger domain. While some have cautioned that the process of reciprocal translation risks reinforcing dominant understandings of a subject by simply summarizing themes occurring across studies (Dixon-Woods et al., 2006), this concern has likely more to do with the fact that most researchers do not advance to the subsequent stages of analysis, which seek to interrogate these themes to yield a more nuanced interpretive description of the phenomenon or new theory. For example, tentative codes, such as ‘understandings of evidence’ (Individual), ‘role conflict’ (Inter-professional), and ‘fiscal constraints’ (Institutional), were employed when coding the data to capture the occurrence of these experiences across studies.

- 2) *Refutational translational analysis* – Refutational translation involves using analytical techniques to explore the divergence of themes across articles – that is, themes that seemingly contradict the reciprocal themes identified during previous stages of the analysis (Atkins et al., 2008; Noblit & Hare, 1988). In doing so, these diverging themes facilitate the interrogation of dominant understandings of phenomena, such as environmental or contextual barriers to knowledge translation. Whereas refutational themes have a tendency to be dismissed within synthesis reviews as being the by-product of contextual factors shaped by the socio-cultural or socio-political conditions in which the studies were undertaken (Barnett-Page & Thomas, 2009), synthesis reviews are strengthened when they more closely examine how diverging experiences may be integrated into a more complete conceptual understandings of social

phenomena (Barnett-Page & Thomas, 2009; Campbell et al., 2003). To this end, I undertook an analysis during which diverging themes – that is, disconfirming or conflicting cases identified during the previous analytical stage – were contrasted with the reciprocal themes to identify how tensions occurring at the individual, inter-professional, and institutional level shaped the uptake of evidence-based practice recommendations. This process enabled the analysis to advance beyond the summarization of themes occurring across studies toward the identification of dynamics, such as tensions in the positioning of biomedical ‘evidence’, that influenced the adoption of research evidence in hospital settings. In turn, this enabled the analysis to further move toward developing a higher order understanding of the knowledge translation process. For example, one previously mentioned code, ‘role conflict,’ was interrogated by using cases in which this did not occur. Subsequently, a new coding category (‘role clarity’) was employed to develop a more nuanced understanding of these experiences.

- 3) *Interpretive description* – Finally, the analytical processes outlined in the previous steps functioned to work toward the development of an interpretive description of the phenomenon – that is, individual, interpersonal, and institutional influences shaping learning processes and environments in relation to the implementation of evidence-based recommendations. This can sometimes also involve the development of new theory (Bearman & Dawson, 2013). In this case, the relationships between the reciprocal and refutational analyses were used to develop higher order constructs that provided a nuanced, interpretive description of how interactions between individual, inter-professional, and institutional influences shape the uptake of knowledge in hospital settings. Collectively, these themes are explored in Chapters 3.

2.5. Conclusion

In conclusion, I have adopted in this thesis a qualitative meta-synthesis approach to generate ‘high level’ insights into how learning processes and environments shape the implementation of knowledge translation interventions in hospital settings and, in turn, their success in supporting the adoption of evidence-based practice recommendations.

This focus has been operationalized through a focus on their individual, inter-professional, and institutional dimensions. I developed a systematic literature search strategy to identify relevant peer-reviewed articles, which were then reviewed in accordance with inclusion criteria reflecting the review objectives. The included articles (see Table 2, p. 25) examined or evaluated knowledge translation interventions in hospital settings, and included an aggregate of more than 750 participants and represented a wide range of education intervention approaches and clinical responsibilities. The analytical approaches sought to elucidate the influence of learning processes and environments across the individual, inter-professional, and institutional levels while attending to the need for detailed description and reflection of interpretations that lend trustworthiness to the findings. Taken together, these steps facilitated the development of the interpretive description presented in Chapter 3.

Chapter 3.

Findings

As outlined in Chapters 1 and 2, previous qualitative studies have identified influences shaping how new research evidence is communicated and taught in hospitals. There is now an imperative to synthesize these studies to generate a more complete understanding about how individual, inter-professional, and institutional influences on learning processes and environments within and across hospital settings shape research adoption. This represents a necessary step toward generating insights critical to reducing the ‘research-to-practice’ gap in hospitals.

This chapter presents findings from the synthesis of twenty-six articles reporting qualitative findings on the uptake of evidence-based practice recommendations among clinicians in hospital settings. As outlined in Chapter 2, I focus on three interconnected levels of influence on knowledge translation emerging from my analysis of the included articles. Furthermore, I draw upon adult learning theory in interpreting these influences on learning processes and environments to situate these in relation to how adults – in this case, clinicians – engage in the knowledge translation process. First, this chapter explores individual-level influences on the implementation of translation interventions in hospitals, specifically: (1) how the ‘positioning’ of research evidence among clinicians determines whether it is integrated into clinical practice; (2); how the perceived benefits of the intervention shape the willingness of clinicians to change clinical practice; (3) how individual educational experiences influence the preparedness of clinicians to change their clinical practice. This chapter is thus concerned with how these individual-level influences shape learning processes, and clinician’s readiness or willingness to engage in practice change and related training. Second, this chapter outlines inter-professional influences in hospitals shaping the translation of evidence-based recommendations into clinical practice, specifically: (1) how ‘practice champions’ function to support the uptake

of evidence-based recommendations; (2) how clarity in roles and expectations among clinicians influences research adoption; and, (3) how inter-professional communication serves to facilitate – or impede – the adoption of evidence-based practices. The concern here is to identify inter-professional dimensions of the larger learning environment that are critical in shaping research adoption. Finally, this chapter explores institutional-level influences on the adoption of evidence-based practices among clinicians in hospitals, namely: (1) how responsive and adaptable knowledge translation interventions are to institutional contexts; and, (2) how institutions navigate fiscal uncertainties when implementing knowledge translation interventions. This chapter thus establishes how institutional contexts of hospital settings frames clinicians’ learning environments and if and how they take up research-based recommendations. Table 3 provides an overview of the distribution of themes and sub-themes across the 26 articles included in this qualitative meta-synthesis.

Table 3. Distribution of themes and sub-themes across included articles

1. Individual-level dimensions	
1.1. Positioning the ‘evidence’ in evidence-based medicine	Bennetts et al., 2012; Bhandari et al., 2003; Chaillet et al., 2007; Chouliara et al., in press; Gerrish et al., 2011; Graham et al., 2004; Hayes et al., 2010; Ireland et al., 2013; Kitto et al., 2011; Lorenz et al., 2005; Majumdar et al., 2004; Perry et al., 2006; Porter et al., 2009; Raja et al., 2008; Summerskill & Pope, 2002; Swennen et al., 2011; Thompson et al., 2011
1.2. Willingness to change clinical practice	Angus et al., 2003; Bennetts et al., 2012; Bhandari et al., 2003; Bradley et al., 2004; Chaillet et al., 2007; Gerrish et al., 2011; Graham et al., 2004; Hayes et al., 2010; Ireland et al., 2013; Kitto et al., 2011; Majumdar et al., 2004; Raja et al., 2008; Swennen et al., 2011; Thurston et al., 2012
1.3. Preparedness to change clinical practice	Angus et al., 2003; Bennetts et al., 2012; Bradley et al., 2004; Brand et al., 2005; Chaillet et al., 2007; Chouliara et al., in press; Gerrish et al., 2011; Graham et al., 2004; Hayes et al., 2010; Ireland et al., 2013; Kitto et al., 2011; Ladak et al., 2013; Lorenz et al., 2005; McInally et al., 2012; Porter et al., 2009; Raja et al., 2008; Steelfisher et al., 2011; Summerskill & Pope, 2002; Swennen et al., 2011; Thompson et al., 2011

2. Inter-professional dimensions	
2.1. Championing evidence-based practice	Bennetts et al., 2012; Bhandari et al., 2003; Bradley et al., 2004; Bradley et al., 2005; Brand et al., 2005; Chaillet et al., 2007; Gerrish et al., 2011; Graham et al., 2004; Ireland et al., 2013; Ladak et al., 2013; Perry et al., 2006; Robert et al., 2011; Steelfisher et al., 2011
2.2. Clarity in inter-professional roles and expectations	Angus et al., 2003; Bennetts et al., 2012; Bhandari et al., 2003; Bradley et al., 2004; Brand et al., 2005; Chaillet et al., 2007; Chouliara et al., in press; Gerrish et al., 2011; Graham et al., 2004; Hayes et al., 2010; Johnston et al., 2011; Kitto et al., 2011; Ladak et al., 2013; Majumdar et al., 2004; McInally et al., 2012; Perry et al., 2006; Robert et al., 2011; Steelfisher et al., 2011; Summerskill & Pope, 2002; Swennen et al., 2011; Thompson et al., 2011
3. Institutional dimensions	
3.1. Responsiveness and adaptability to the institutional context	Angus et al., 2003; Bradley et al., 2004; Bradley et al., 2005; Brand et al., 2005; Chaillet et al., 2007; Chouliara et al., in press; Gerrish et al., 2011; Hayes et al., 2010; Ireland et al., 2013; Johnston et al., 2011; Kitto et al., 2011; Ladak et al., 2013; Majumdar et al., 2004; McInally et al., 2012; Porter et al., 2009; Raja et al., 2008; Robert et al., 2011; Steelfisher et al., 2011; Swennen et al., 2011; Thompson et al., 2011
3.2. Navigating fiscal uncertainties & resource limitations	Angus et al., 2003; Bennetts et al., 2012; Bhandari et al., 2003; Bradley et al., 2004; Bradley et al., 2005; Brand et al., 2005; Graham et al., 2004; Hayes et al., 2010; Ireland et al., 2013; Lorenz et al., 2005; McInally et al., 2012; Majumdar et al., 2004; Perry et al., 2006; Raja et al., 2008; Steelfisher et al., 2011; Summerskill and Pope, 2002; Swennen et al., 2011; Thompson et al., 2011; Thurston et al., 2012

3.1. Individual-level dimensions

3.1.1. Positioning the 'evidence' in evidence-based medicine

Studies included in this synthesis highlight how the positioning of 'evidence' in relation to other forms of knowledge (such as experiential or professional knowledge) is critical in shaping the implementation of evidence-based recommendations in hospital

settings. It is important to first note that some studies included in this synthesis lacked reflexivity in regards to how 'evidence' was understood and mobilized by clinicians, and tended to link the uptake of evidence-based recommendations to clinicians' level of 'research literacy' (Lorenz et al., 2005; Majumdar, Simpson, & Marrie, 2004; Porter, Raja, Cant, & Aroni, 2009). Clinicians with high levels of research literacy (for our purposes, understood as technical knowledge relating to practice recommendations) were considered more likely to successfully implement evidence-based recommendations while those with low levels of research literacy were considered to be less likely to do so. Among these studies, clinicians were not given space to question the merits of 'evidence' or its applicability to their practice setting (Lorenz et al., 2005; Majumdar et al., 2004; Porter et al., 2009). In turn, these studies demonstrate how knowledge translation interventions in hospital settings can function to reinforce the biomedical authority of researchers by positioning 'evidence' as 'scientific truth' that *must be followed* in order to provide effective patient care.

A closer examination of how clinicians *viewed* the 'evidence' in evidence-based recommendations and *positioned* it alongside other forms of knowledge reveals how they challenged the positivism of knowledge translation interventions by contesting the supremacy of 'evidence' itself (Bennetts, Campbell - Brophy, Huckson, & Doherty, 2012; Bhandari et al., 2003; Chaillet et al., 2007; Chouliara, Fisher, Kerr, & Walker, In press; Gerrish et al., 2011; Graham, Logan, Davies, & Nimrod, 2004; Hayes et al., 2010; Ireland et al., 2013; Kitto, Petrovic, Gruen, & Smith, 2011; Perry, 2006; Raja et al., 2008; Summerskill & Pope, 2002; Swennen, van der Heijden, Blijham, & Kalkman, 2011; Thompson & Kagan, 2011). Many studies included in this synthesis underscored how clinicians contested the 'scientific authority' of evidence-based recommendations by questioning the relevance and applicability of specific recommendations to either their clinical practice or practice environment (Bennetts et al., 2012; Bhandari et al., 2003; Chouliara et al., In press; Kitto et al., 2011; Swennen et al., 2011).

This was accomplished in three distinct ways. First, several studies described that clinicians often considered colleagues working in the same fields in other hospital settings as less skilled (Bhandari et al., 2003; Hayes et al., 2010; Kitto et al., 2011). As a consequence, they argued that research demonstrating the ineffectiveness or

inefficiency of current practices in comparison to new clinical interventions stemmed from the inadequacies of other clinicians. For example, one study examining the uptake of evidence-based recommendations among surgeons in university teaching hospitals found that these recommendations were questioned because surgeons in other hospitals were presumed to be less technically adept:

We have staff surgeons who dismiss most randomized trials that don't agree with their approach by saying that the surgeons who published the paper must not be as technically adept as them. As residents, we are destined to gain exposure to the procedures with which our staff surgeons are most comfortable, and not those necessarily guided by the evidence. I'm not sure whether this is an underlying insecurity with having to learn a new procedure with a new learning curve, or a reflection of their egos. [Surgical Resident] (Bhandari et al., 2003, p. 1186)

Second, several studies outlined that clinicians questioned whether research evidence generated in other settings or under controlled study conditions, such as randomized controlled trials, was relevant or applicable to their clinical practice and practice environment (Bhandari et al., 2003; Chaillet et al., 2007; Gerrish et al., 2011; Kitto et al., 2011). This suggests that the knowledge translation activities can actively involve the questioning of evidence claims. Among these studies, clinicians commonly emphasized that evidence-based recommendations could not possibly account for the complex health care needs of their patients or contextual factors within their practice environment, such as competing demands or organizational cultures (Bhandari et al., 2003; Chaillet et al., 2007; Gerrish et al., 2011; Kitto et al., 2011). In turn, as the following interview excerpt from a study undertaken to explore the role of advanced practice nurses in supporting research adoption suggests, clinicians questioned whether research was transferable:

Research may indicate that a drug works well for treating a particular condition. But the trial will have been done in a controlled way, the sample will have been selected to fulfil particular criteria. The real world isn't like that. Patients often have multiple pathologies, which mean that the drug may not be the most appropriate for an individual patient. We need to consider the whole picture before acting on what appears to be robust evidence. [Nurse] (Gerrish et al., 2011, p. 2009)

Finally, clinicians often emphasized that evidence was continuously evolving, and that recommendations based on current research might be contradicted by future studies (Bennetts et al., 2012; Graham et al., 2004; Summerskill & Pope, 2002). In doing so, clinicians challenged the positivism underlying knowledge translation by pointing to how alternate and/or conflicting evidence, either now or in the future, might undermine the scientific authority of evidence-based recommendations. For example:

I am going to say to them [patients] that the current recommendation for cholesterol is this. It won't be that next year. It wasn't that ten years ago. We have lots of good evidence but that will all change, so be aware of that fact. I have this discussion everyday with people. That this is a moving target but the best I can do for you is try to interpret the stuff that is coming in my direction...I don't always trust evidence entirely. We have all seen evidence come and go. [General Practitioner] (Summerkill & Pope, 2002, p. 608).

Within this context, studies included in this synthesis highlighted how clinicians weighed the 'evidence' of evidence-based recommendations against other sources of information, including experiential knowledge, professional organizations, and even pharmaceutical companies, before making decisions regarding changes to their clinical practice (Bennetts et al., 2012; Chaillet et al., 2007; Chouliara et al., In press; Gerrish et al., 2011; Graham et al., 2004; Kitto et al., 2011; Lorenz et al., 2005; Thompson & Kagan, 2011). In doing so, clinicians demonstrated how understandings of their clinical practice were rooted in constructivist paradigms that privileged experiential knowledge and other forms of knowledge encountered regularly in their daily practice. Following Kolb (2014), clinicians in the included studies can be seen to construct their clinical practice primarily by reflecting on their clinical experiences, in the mode of reflective observation; engage in abstract conceptualization to understand their practice; and, to decide how to best provide care through active experimentation (Bennetts et al., 2012; Chaillet et al., 2007; Chouliara et al., In press; Gerrish et al., 2011; Graham et al., 2004; Kitto et al., 2011; Lorenz et al., 2005; Thompson & Kagan, 2011). Clinicians thus emphasized how sources of information with personal authority gained through learning by doing were most critical in constructing understandings of their practice. These constructivist understandings of clinical practice were further informed and confirmed by information from those seen to have professional authority, such as professional

organizations and pharmaceutical companies. Clinicians encountered these sources regularly in their practice environment and, in the case of professional organizations or regulatory colleges, were potentially accountable to them.

Studies included in this synthesis thereby demonstrated that constructions of clinical practice mediated by experiential knowledge and professional authority had the potential to reinforce or contradict evidence-based recommendations, often by questioning the validity of the evidence upon which recommendations are based (Bennetts et al., 2012; Chaillet et al., 2007; Chouliara et al., In press; Gerrish et al., 2011; Graham et al., 2004; Kitto et al., 2011; Thompson & Kagan, 2011). That is, the 'scientific authority' of research evidence in the vein of positivism was often contested by ways of knowing and learning rooted in alternate epistemological traditions, such as constructivism. These tensions were critical in influencing decisions about whether or not to integrate evidence-based recommendations into clinical practice (Bennetts et al., 2012; Gerrish et al., 2011; Kitto et al., 2011; Summerskill & Pope, 2002). In a further example, clinicians in multiple studies articulated how they considered evidence-based recommendations within the broader context of their past experiences providing care in hospital settings to determine whether specific recommendations were applicable to their setting, relevant to their patient population, and better than existing clinical practices:

They come quite high on the list because to me they are a most useful source of information on drugs, and it is often on a weekly basis...I try not to let them influence me in what I actually use but, inevitably, if they are trying to sell their drug, and give some obvious advantages, or perhaps cost savings, one would consider that. [Physician] (Summerskill & Pope, 2002, p. 608)

Meanwhile, clinicians in other studies emphasized how support for evidence-based recommendations among professional organizations, such as professional associations and regulatory colleges, increased their likelihood of research adoption, thereby demonstrating how other forms of professional authority are mobilized alongside the 'scientific authority' of researchers to shape research adoption (Chaillet et al., 2007; Graham et al., 2004; Ireland et al., 2013). Here, studies included in this synthesis demonstrate the 'relative power' of evidence, insofar as some sources are deemed to have more or less authority based on their status. For example, one nurse in a study of

the adoption of fall prevention clinical practice guidelines emphasized the importance of support by a prominent nursing organization:

RNAO branding is the key—nurses have confidence in the RNAO—there is an awareness of what they have done for nursing. [Nurse, Canada] (Ireland et al., 2013, p. 99)

3.1.2. Willingness to change clinical practice

While studies included in this synthesis emphasized the importance of, as one author put it, “staff understanding the need for the change” (Bennetts et al., 2012, p 140), the narratives of clinicians demonstrated how such understandings must also coincide with a willingness to change clinical practice in order for research adoption to occur. The willingness of clinicians to change their clinical practice was influenced by the perceived urgency of the ‘problem’ that evidence-based recommendations set out to address (Angus, Hodnett, & O'Brien-Pallas, 2003; Chaillet et al., 2007; Graham et al., 2004; Swennen et al., 2011). That is, evidence-based recommendations that corresponded with significant challenges encountered within their practice environment, such as adverse patient outcomes, were more likely to be viewed positively by clinicians than those that were considered less urgent. Here, the alignment of evidence-based recommendations with the perceptions of clinicians and their direct experiences in providing care demonstrates that positivist and constructivist knowledge paradigms can co-exist. The following interview excerpts from studies included in this synthesis illustrate how clinicians can thus be eager to adopt new practices because of their potential to respond to challenges that they encountered in providing care in their hospitals:

A patient arrived in clinic with compression therapy applied by a community nurse to treat his leg ulcer. The patient hadn't been assessed properly or an ankle brachial pressure index recorded prior to these bandages being applied. This contravenes national and local guidelines and is a clinical risk to the patient. I used this as an example of unsafe practice to the clinic nurses. I completed a clinical incident report to raise the profile of this risk and allow an action plan to be formulated to reduce risks to future patients. I visited the community team and discussed the importance of adhering to guidelines. [Nurse Practitioner] (SteelFisher et al., 2011) p. 1877

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Nonetheless, studies included in this synthesis illustrate how individual and extra-individual factors can undermine willingness to adopt evidence-based practice recommendations. Multiple studies outlined how more experienced clinicians, that is, “older doctors” or “experienced nurses,” were found to be less willing to make changes to their clinical practice (Bennetts et al., 2012; Bhandari et al., 2003; Graham et al., 2004; Kitto et al., 2011; Swennen et al., 2011). For these clinicians, their ‘frames of reference’ outweighed other potential ways of seeing clinical care because these had been established and reinforced through years of implementing and evaluating practices to determine how to best provide care. As outlined earlier in this chapter, this resistance also reflects divergent views regarding the ‘value’ of evidence-based recommendations; however, it was also often understood by clinicians to be the product of established ‘habits’. Here, the focus on ‘habits’ illustrates how certain ways of providing care become routinized within clinical practice based on people’s frames of reference, and how it can be difficult to prompt critical reflection on potential practice changes when interventions are not designed to do so. For example:

I am very positive about something I learnt here... But the staff in [x] is, of course, not going to listen to me.... They are very conservative. I think for many older doctors it’s all a matter of habit, so they will not teach new things to registrars either.’ [Physician] (Swennen et al., 2011, p. 779)

We had this older staff surgeon who could not be convinced to update his 1960s technique in maturing colostomies despite obviously better methods. Now, that way of maturing colostomies doesn’t happen anymore since he’s retired. [Surgeon] (Bhandari et al., 2003, p. 1186)

Importantly, because senior clinicians were more likely to occupy leadership roles within hospitals, their resistance to the adoption of evidence-based practice recommendations had the potential to constrain the efforts of those eager to make changes to their clinical practice, whether they were in similar or subordinate positions.

This suggests that the prevailing assumption among these senior clinicians was that their existing practices were sufficient in providing optimal patient care because these were rooted in their own experiences. However, these did not reflect the views of those directly providing care. In these cases, studies included in this synthesis illustrate how asymmetrical power relations, such as those occurring between senior physicians and nurses, have the potential to undermine the adoption of evidence-based practices even when such changes are recognized as important by other clinicians (Bennetts et al., 2012; Bhandari et al., 2003; Graham et al., 2004; Kitto et al., 2011; Thurston & Waterworth, 2012). In turn, this can foster situations in which 'entrenched practices' persist within hospital settings despite recognition that there are better ways to deliver patient care (Bennetts et al., 2012; Bhandari et al., 2003; Graham et al., 2004; Kitto et al., 2011; Thurston & Waterworth, 2012). For example:

No they [doctors] don't like it [the LCP]. When I asked someone ... "Perhaps we should start this person on the LCP?", I had to leave them the information ... because it's meant to be signed off by the doctor. He didn't do it he just disappeared.' [Nurse] (Thurston & Waterworth, 2012, p. 503)

3.1.3. Preparedness to change clinical practice

While a willingness to change clinical practice was a necessary condition for the implementation of evidence-based recommendations, studies included in this synthesis underscored how individual-level factors shaped the 'preparedness' of clinicians to adopt research. Multiple studies emphasized how knowledge translation interventions commonly involved changes to clinical practices considered to be 'routine', such as fever management or birth protocols (Angus et al., 2003; Bennetts et al., 2012; Chaillet et al., 2007; Kitto et al., 2011; Ladak et al., 2013; Lorenz et al., 2005), and how the perceived 'common-sense' nature of these clinical practices fuelled perceptions that "most care is routine and does not require evidence" (Lorenz et al., 2005, p. 411). Among clinicians 'willing' to change their clinical practice in response to perceived problems in their practice environment, these changes required them to not only learn new clinical practices but also to 'unlearn' clinical practices that they performed intuitively through a continuous process of testing new practices and critical reflection (Bradley, Schlesinger, Webster, Baker, & Inouye, 2004; Graham et al., 2004; Kitto et al., 2011; Lorenz et al.,

2005). Studies included in this synthesis demonstrated how previous training in evidence-based medicine made clinicians more likely to reflect on clinical practices and revise them to account for new evidence (Brand et al., 2005; Chaillet et al., 2007; McNally, Masters, & Key, 2012). As the following interview excerpt illustrates, clinicians open to revisiting their existing practices were better prepared to implement evidence-based practices:

A woman patient of mine was on [Drug A], and although her one year bone density scan was worse, she wanted to stay on it for other reasons. The family was asking for [Drug B] to be added. I don't recall seeing [Drug A] and [Drug B] data, so they were stretching the boundaries of my clinical knowledge. That was something I looked up. (Lorenz et al., 2005, p. 412)

Multiple studies pointed to the need for training and education as part of the knowledge translation process to accommodate learning and thus further equip clinicians with the necessary skills to change their clinical practices (Brand et al., 2005; Chaillet et al., 2007; Gerrish et al., 2011; Graham et al., 2004; Ireland et al., 2013; Ladak et al., 2013; Lorenz et al., 2005; McNally et al., 2012). While articles adopting positivist positions toward knowledge translation positioned training and education as way to address a “lack of knowledge” (Hayes et al., 2010), other articles emphasized how training initiatives within the practice environment provided clinicians with an opportunity to test interventions in order to gain confidence in the practice changes (Ladak et al., 2013; McNally et al., 2012). Consistent with constructivist paradigms, this provided opportunities for clinicians to develop and test new understandings of their clinical practice, in the vein of learning by doing, and thereby construct new ways of providing care. Among these articles, having training initiatives delivered by someone trusted by clinicians further supported the adoption of evidence-based recommendations. For example:

[We need] someone from our specialty giving it. In respect of what your specialty is would be a good thing, but you'd want to make sure that person has appropriate [evidence-based medicine] training and [needs to know] what they're talking about. That would be the big problem, maybe an impossibility, because most of us would be like me [have limited evidence-based medicine training]. (Kitto et al., 2011, p. 822)

3.2. Inter-professional dimensions

3.2.1. *'Championing' evidence-based practice*

Studies included in this synthesis underscored how clinical leaders supported the uptake of evidence-based recommendations in hospital settings. Various referred to as “champions” (Bennetts et al., 2012; Bradley, Webster, Baker, Schlesinger, & Inouye, 2005; Gerrish et al., 2011; Graham et al., 2004; Robert, Morrow, Maben, Griffiths, & Callard, 2011; SteelFisher et al., 2011), “torchbearers” (Bradley et al., 2004), and “stars” (Perry, 2006), these clinicians were perceived as ‘experts’ by their colleagues and occupied leadership roles within hospital settings. Of critical importance was that “champions” already occupied such roles within the hospitals implementing knowledge translation interventions in order to be considered credible. One physician participating in a study exploring evidence-based pain management practices in hospital settings noted:

I think that every time someone has tried to impose a change from outside the department, it may go well at the beginning, but after a while [it just diminishes]. [Emergency doctor] (Bennetts et al., 2012, p. 140)

Within this context, champions exercised their perceived expertise and positional authority to achieve “buy-in” from clinicians regarding the imperative to implement evidence-based recommendations. Multiple studies included in this synthesis outlined how the ‘success’ of knowledge translation interventions ultimately hinged on whether a champion had been appointed prior to the implementation of the knowledge translation or otherwise emerged during the implementation process (Bradley et al., 2004; Bradley et al., 2005; Gerrish et al., 2011; Graham et al., 2004). For example, Bradley and colleagues (2004/2005) found that hospitals appointing and retaining those described as champions during the implementation of evidence-based recommendations for delirium management were more likely to achieve sustainable practice changes than settings lacking or losing champions during the implementation process. In this regard, it was critical not only that those perceived as champions were present, but that their leadership was stable throughout the implementation of evidence-based recommendations (Bradley et al., 2004, Bradley et al., 2005).

Studies included in this synthesis illustrate how champions carried out diverse activities in order to promote the implementation of evidence-based recommendations. One of the primary roles of these individuals was to reinforce the importance of evidence-based practice recommendations during implementation. Many practitioners designated as champions in the included studies articulated how such advocacy involved emphasizing the improvements in patient outcomes likely to occur as a result of practice changes. For example:

We were very, very clear with physicians that it would be virtually transparent to them, except that their patients would be looking better and doing better. If we say, 'This isn't going to require you to do anything, but it's going to make your life easier and better and your patients healthier and happier,' who could be against that? (Physician) (Bradley et al., 2004, p. 1878)

Meanwhile, multiple studies outlined how champions worked closely with clinicians to directly support them in implementing practice changes. In doing so, these clinicians served a dual role as “educators” in mobilizing their clinical experience or specialized training to translate new clinical practices in ways that were accessible to colleagues, and often viewed themselves as “resources” for colleagues (Bradley et al., 2004; Bradley et al., 2005; Gerrish et al., 2011; Ladak et al., 2013; Robert et al., 2011; SteelFisher et al., 2011). Importantly, such individuals were often tasked with monitoring the implementation of evidence-based recommendations, which enabled them to identify when further support was needed to optimize research uptake. For example:

She's (APN) supported me implementing change. An audit showed that we weren't doing as well as we should in relation to some of the stroke standards, so she worked with me to plan and implement the changes we needed to make. (Ward manager SC20) (Gerrish et al., 2011, p. 2011)

Finally, champions leveraged their positional authority to advocate for the institutional supports, including staffing resources and new equipment, necessary for successful research adoption (Bradley et al., 2004; Bradley et al., 2005; Chaillet et al., 2007; Graham et al., 2004; Ladak et al., 2013). As Graham and colleagues (2004) noted, knowledge translation interventions that identified champions in clinical, administrative or other locations within institutional hierarchies were better able to leverage resources. While the scope of institutional support varied considerable across sites and

interventions, even the most meagre supports functioned to reinforce among clinicians that their work was valued by the hospital. For example:

In terms of because we did our own lunch-and-learn pizza contest, so funding for these things, so we were able to get X (manager) to help us fund some of the it, so funding for the initiatives that X and I would do; it's great to have like some corporate help. (Ladak et al., 2013, p. 71)

3.2.2. 'Role clarity' – Communicating inter-professional roles and expectations

There is considerable evidence that the degree of clarity regarding inter-professional roles and expectations was critical in shaping the implementation of evidence-based recommendations in hospital settings. Even seemingly straightforward knowledge translation interventions involved clinicians from diverse professional practices across hospital settings, including nurses, physicians, allied health professionals, with each playing a different role in the implementation of evidence-based recommendations. 'Role clarity' was determined by the extent to which roles and expectations were communicated clearly and effectively by these groups of clinicians and played an important role in research adoption (Bradley et al., 2004; Chouliara et al., In press; Graham et al., 2004; Hayes et al., 2010; Johnston, Young, Grimmer-Somers, Antic, & Frith, 2011; Ladak et al., 2013). Studies documenting a high degree of 'role clarity' were more likely to report success regarding changes to clinical practice, with clinicians across departments and roles contributing to research adoption (Johnston et al., 2011; Ladak et al., 2013; Majumdar et al., 2004; Robert et al., 2011; SteelFisher et al., 2011). In these cases, knowledge translation interventions included educational and outreach activities that led to improved communication and thus awareness of changes to clinical practices beyond the department(s) and professional group(s) directly responsible for implementing changes. Studies included in this synthesis illustrated how "champions" were once again instrumental in promoting 'role clarity' by working with clinicians across clinical settings and practice groups to clearly communicate what was expected of them and situate these expectations in relation to their clinical practice (Bradley et al., 2005; Graham et al., 2004; Johnston et al., 2011; Ladak et al., 2013). As the following interview excerpts from studies exploring the implementation of early discharge and geriatrics interventions illustrate, 'role clarity' is an outcome of effective inter-professional communication:

It's about being able to break down the role and make sure that the right skilled person is doing the right part of the intervention. (Chouliara et al., in press, p. 3).

I think having the medical staff on board— at least in this facility—is vital because the medical staff is a strong driver of programs in this facility... There is a strong presence of the HELP staff every week at grand rounds. ... There is ongoing communication with the medical staff in terms of [each patient]... Also, the HELP team is not isolated on the HELP program, they serve on other committees where they are visible in hospital. So, for example, we have a pressure ulcer prevention team that the nurse practitioner and the nurse from HELP strongly support, and they are visible during those presentations as well. (Steelfisher et al., 2011, p. 1879)

Conversely, studies included in this synthesis documenting poor 'role clarity' among clinicians within hospitals positioned this phenomenon as "one of the biggest stumbling blocks" (Chouliara et al., In press, p. 5) to research adoption. These studies emphasized how clinicians were unclear regarding the specifics of the evidence-based recommendations and responsibilities of specific clinicians, such as nurses and nurse practitioners, within their hospitals due to poor communication (Chaillet et al., 2007; Hayes et al., 2010; Johnston et al., 2011; Ladak et al., 2013). This uncertainty limited the capacity of clinicians to provide care consistent with the recommendations being implemented in their setting. For example:

Some of the nurses think we can order stuff. So it's always suggestions; we would suggest to the resident, OK, this patient has chronic pain and now has acute pain, can you, we would suggest it might be good to have this drug included with their pain medications, sometimes they say, oh, can you just write that, and I say, oh no, I can not. [Nurse Practitioner] (Ladak et al., 2013, p. 71)

[The Nurse] recounts a situation where she spent considerable time coaching a mother and helping her with comfort measures, 'and then unbeknownst to me, this doctor comes in and sees she is a bit uncomfortable, and says: "Well, why don't you have an epidural?" ' She says that doctors will offer what they can to relieve discomfort, while nurses have an entirely different set of skills to offer that are less technical and not as dramatic (3-02-interview fieldnotes). (Angus et al., 2003, p. 224)

Importantly, multiple studies included in this synthesis demonstrated how the organizational culture of hospitals could impede knowledge translation interventions by fostering power hierarchies that undermined the capacity of clinicians to implement evidence-based practices (Bennetts et al., 2012; Bhandari et al., 2003; Bradley et al., 2005; Kitto et al., 2011). While the institutional arrangements of individual hospital settings posed unique changes, this synthesis identified two dynamics relating to inter-professional roles and expectations that functioned to undermine research adoption. First, clinicians in leadership positions, such as clinical supervisors and medical directors, could limit the ability of junior clinicians to implement evidence-based practices by explicitly or implicitly signalling a lack of support for change (Bennetts et al., 2012; Graham et al., 2004; Summerskill & Pope, 2002). These hospital settings tended to transmit clinical practices from one generation of clinicians to the next through ‘hidden curricula’ – that is, common understandings and practices prized over research ‘evidence’ (Bennetts et al., 2012; Bhandari et al., 2003; Kitto et al., 2011). The following excerpt from an interview with a surgical resident highlights how junior clinicians were expected to not challenge existing practices, and how this served to undermine research adoption:

I’m not going to risk being a trendsetter and tell a staff surgeon that his technique is dated, even if I know that other centers are favoring a less costly and more effective one—what for? I already know his response: “I’ve been doing this operation for 15 years now and it’s worked well for me.” [Surgical Resident] (Bhandari et al., 2003, p. 1185)

Second, knowledge translation interventions were often complex and involved clinicians from across departments within hospitals such as emergency rooms and specialist wards. Conflicts between departments stemming from competing goals and clinical responsibilities posed challenges to the implementation of evidence-based recommendations (Hayes et al., 2010; Johnston et al., 2011; Summerskill & Pope, 2002; Thompson & Kagan, 2011). Clinicians in departments not principally involved in knowledge translation interventions seldom perceived themselves to be ‘responsible’ for implementing changes, and often lacked staffing resources and training necessary to do so. Much to the frustration of clinicians in departments implementing evidence-based recommendations, this meant that evidence-based recommendations were not

implemented evenly across hospitals. For example, one medical specialist describes the challenges in working with the Emergency Department in their hospital:

I went and I tried to talk to the emergency doctors, I took the Blatchford scale and stuck it on the wall but I don't even think it's on the wall anymore. So, the assessment by the emergency physician is strictly clinical, and I don't know what criteria they use really. [Gastroenterologist] (Hayes et al., 2010, p. 293)

3.3. Institutional dimensions

3.3.1. Responsiveness and adaptability to the institutional context

Knowledge translation interventions are implemented within complex institutional settings, and whether or not they are feasible often hinged on their responsiveness and adaptability to the local context. Studies included in this synthesis underscore that although evidence-based medicine was positioned by hospital administration as central to hospital practices, the uptake of evidence-based recommendations was frequently determined by the extent to which evidence-based practices aligned with hospital goals (Bradley et al., 2004; Ireland et al., 2013; Robert et al., 2011; Swennen et al., 2011). Multiple studies emphasized how hospitals must view knowledge translation interventions as responsive to local health priorities, as well as the strategic priorities of their institution that are often concerned with cost savings and improved efficiency, in order for them to receive adequate institutional support (Bradley et al., 2004; Chouliara et al., In press; Graham et al., 2004; Ireland et al., 2013; Majumdar et al., 2004; Robert et al., 2011; Swennen et al., 2011). Interventions that were aligned with existing clinical programs or strengths were also viewed as opportunities to build upon to further enhance patient care (Bradley et al., 2004; Bradley et al., 2005; Chaillet et al., 2007; Ireland et al., 2013). In discussing an interdisciplinary geriatrics intervention implemented across multiple hospitals, one nurse emphasized how well it aligned with existing programming:

HELP is sort of an adjunct to the [ACE program]. On a unit where patients were admitted and covered by a geriatric team, the HELP program would be another benefit, as part of that team, working to keep people active mentally and physically. (Nurse specialist) (Bradley et al., 2004, p. 1879)

It is worth noting that knowledge translation interventions were required to perform a delicate balancing act. That is, interventions had to demonstrate alignment with institutional goals or existing programming to achieve ‘buy in’ while simultaneously fostering the perception that clinicians drove clinical changes (Bennetts et al., 2012; Graham et al., 2004). Otherwise, as Graham and colleagues (2004) noted, knowledge translation interventions risked being labelled as ‘top-down’ by clinical staff, and thus could face resistance.

Multiple studies outlined how balance was achieved through staff consultations and pilot studies prior to ‘scaling up’ knowledge translation interventions (Bradley et al., 2004; Gerrish et al., 2011; Graham et al., 2004). Consultations and pilot studies functioned to demonstrate the responsiveness of evidence-based recommendations to local priorities, as well as enhance their relevance to clinical staff (Bradley et al., 2004; Chaillet et al., 2007; Graham et al., 2004). Several studies emphasized how pilot interventions were, therefore, instrumental in providing opportunities to ‘test’ clinical changes to determine ways to enhance their transferability to hospitals (Bradley et al., 2004; Gerrish et al., 2011; Ireland et al., 2013; Robert et al., 2011).

Against this backdrop, studies included in this synthesis illustrated how knowledge translation interventions were modified to increase responsiveness to local priorities and circumstances, and how this better enabled clinicians to successfully change clinical practices (Bradley et al., 2004; Chouliara et al., In press; Graham et al., 2004; Ireland et al., 2013; Swennen et al., 2011). Adapting interventions to local circumstances allowed clinicians to, as one nurse described, “figure out what’s appropriate and what’s not appropriate to do here [in their hospital]” (Bradley et al., 2005, p. 1459). In some cases, this meant only partly implementing evidence-based recommendations contained within clinical practice guidelines (Bradley et al., 2004; Bradley et al., 2005; Ireland et al., 2013; Majumdar et al., 2004; SteelFisher et al., 2011), while in others it meant making modifications to optimize implementation such as extending the training period (Chaillet et al., 2007; Johnston et al., 2011; Kitto et al., 2011; Majumdar et al., 2004; Raja et al., 2008). In both cases, these adaptations were viewed as critical to recognizing the needs of staff and accommodating clinical realities, with one nurse noting that, “[administrators must] *not assign arbitrary goals that are*

someone's goals that don't reflect the realities of staff" (Ireland et al., 2013, p. 100). As outlined in several studies, adapting evidence-based recommendations to the institutional context of individual hospitals further ensured that clinicians could sustain practice changes following the completion of time-limited knowledge translation interventions (Bradley et al., 2004; Bradley et al., 2005; Ireland et al., 2013; Thompson & Kagan, 2011). For example:

We are trying to adhere to the HELP protocols, but we also recognize that our institution needs to make these adaptations to figure out what's appropriate and what's not appropriate to do here in this hospital. [Nurse Specialist] (Bradley et al, 2004, p. 1878)

Importantly, multiple studies outlined how deviations from strict adherence to evidence-based recommendations represented a way for clinicians to exercise clinical judgment in responding to complex clinical situations or institutional limitations (Chouliara et al., In press; McInally et al., 2012; Robert et al., 2011; Swennen et al., 2011; Thompson & Kagan, 2011). Often these clinical situations stemmed from medical complexities, such as multiple medical diagnoses, not accounted for by the evidence-based recommendations. A physician in one study summed up this complexity by noting that "no two stroke cases are ever going to be the same [and] our systems need to be reflective of that" (Chouliara et al., In press, p. 372). Meanwhile, constraints imposed upon clinicians by their practice environment, including the lack of equipment or resources, also meant that evidence-based recommendations had to be tailored to the individual hospital setting to account for these limitations. In either case, clinicians expressed that they felt empowered to exercise clinical judgement in managing these situations or environmental constrains, in the words of one physician, "as long as you have good reasons to do so" (Swennen et al., 2011). Among clinicians, feelings of empowerment stemmed from the recognition that the combination of evidence-based practices and clinical judgment was consistent with the care 'ethic' central to their clinical practice (McInally et al., 2012; Robert et al., 2011). For example:

The thing that really appeals to me is because it actually does focus on what nurses do for patients and how we can improve that and it focuses on all the essentials of care. I think it empowers ward sisters and ward teams to be able to take control of their environment and their ward and make it the best. (Nurse) (Robert et al., 2011, p. 1200)

3.3.2. Navigating fiscal uncertainties & resource limitations

Healthcare systems have increasingly taken a neoliberal turn in which hospitals are required to cope with decreased funding and the demand that they “do more with less” (Bergmark, 2008; Benoit et al., 2010). The subsequent restructuring of hospitals to achieve ‘greater efficiency’ has led to chronic staff shortages and resource limitations in all but the most prestigious (and costly) private hospitals. Studies included in this synthesis underscored how fiscal uncertainties stemming from this broader restructuring of hospital care has proven critical in constraining the adoption of evidence-based recommendations (Angus et al., 2003; Bennetts et al., 2012; Bhandari et al., 2003; Bradley et al., 2004; Graham et al., 2004; Majumdar et al., 2004; SteelFisher et al., 2011). Several studies focused on knowledge translation interventions that were impacted by unexpected fiscal crises arising due to external political and economic factors such as rapid healthcare reforms, funding cuts and economic downturns (Bennetts et al., 2012; Lorenz et al., 2005; Summerskill & Pope, 2002; Swennen et al., 2011). These studies further illuminate key challenges associated with resource limitations experienced in nearly all study settings accounted for in this synthesis.

Most notably, studies included in this synthesis underscored how staff shortages and turnover stemming from institutional policies and practices constrained the capacity of clinicians to implement evidence-based recommendations, particularly in fast-paced settings, such as emergency departments and surgery, where the real or perceived ‘extra’ time or training needed to practice evidence-based medicine was felt to make knowledge translation impossible (Bhandari et al., 2003; Graham et al., 2004; Thompson & Kagan, 2011; Thurston & Waterworth, 2012). For example, staff shortages made it impossible to implement evidence-based recommendations because clinicians were already grappling with unrealistic pressures (Bennetts et al., 2012; Bradley et al., 2004; Bradley et al., 2005; Hayes et al., 2010; Ireland et al., 2013). As an emergency department physician in one study noted, “When you are battling to keep your head above water, it’s very hard to aim for excellence” (Bennetts et al., 2012, p. 140). Within this context, several studies outlined that the pressure faced by clinicians to provide care ‘faster’ to compensate for staffing shortages prevented them from implementing evidence-based recommendations or, in some cases, from even receiving the necessary training (Bhandari et al., 2003; Hayes et al., 2010; Swennen et al., 2011). For example:

We see 70 plus patients per fracture clinic and are always being pushed to go faster. If I were to spend an extra ten minutes with a patient, that would mean that I would surely delay the clinic by hours, and patients would be irritated. (Medical Resident) (Bhandari et al., 2003, p. 1187)

Another practitioner noted, “[w]e are so short-staffed-wise, knowledge-wise, and then there was no follow-up or education post-follow-up as to what could have worked better. There’s a learning need here, and it gets very frustrating (Nurse) (Hayes et al., 2010, p. 293). Meanwhile, other studies highlighted how staff turnover stemming from institutional practices such as the hiring of ‘temporary’ or ‘casual’ staff, undermined continuity in the availability of ‘champions’ and thus the sustainability of the knowledge translation interventions. For example: “All of our medical staff have got such a high rotation we have internal residents they’re really in the department for 10 weeks all we can really try and do is make them competent” (Physician) (Bennetts et al., 2012, p. 140).

Within this context, the burden often fell upon those concerned with implementing evidence-based practice recommendations to demonstrate that changes to clinical practice were ‘cost effective’ – that is, were revenue neutral or produced cost savings – in order to achieve and sustain institutional support. Multiple studies outlined how it was necessary for knowledge translation interventions to clearly demonstrate cost savings to offset additional program costs, and thus be viewed favourably by hospital administration (Bradley et al., 2004; Bradley et al., 2005; Graham et al., 2004; Ireland et al., 2013; Lorenz et al., 2005; Majumdar et al., 2004). However, despite the fact that knowledge translation interventions take time to implement, there was an expectation that cost savings be demonstrated quickly (six months or less) in order for the intervention to maintain initial support. For example:

I think everything’s taking longer than we planned to take, and I think that that’s exactly how it is when you do something new. You figure out how long it could possibly take and then it takes four times that long. We’re certainly experiencing that. (Physician leader) (Bradley et al., 2004, p. 1880)

In some cases, knowledge translation interventions were implemented as part of larger-scale studies and funding was provided as part of research grants to cover certain costs, such as training support and replacement staffing (Bradley et al., 2004; Bradley et

al., 2005; Ireland et al., 2013; Lorenz et al., 2005; Summerskill & Pope, 2002). However, given the term-limited nature of research funding, it nonetheless became necessary to demonstrate long-term cost effectiveness in order to receive an appropriate level of funding to maintain the minimum levels of staffing needed to sustain the practice change.

3.4. Conclusion

In summary, this chapter outlined how individual, inter-professional, and institutional factors shape the adoption of evidence-based recommendations in hospital settings. Of particular importance is that underlying tensions operating at the individual-level between what evidence matters (biomedical v. experiential), how it is constructed (positivist v. constructivist), how clinicians are trained (evidence-based medicine v. experiential learning) are critical determinants of the willingness and readiness to adopt evidence-based practices. Beyond these individual-level dynamics, this chapter demonstrated the many ways in which the implementation of evidence-based practices is beyond the control of any individual clinician. In doing so, this synthesis has served as an important corrective to previous studies by bringing into focus contextual factors, such as the degree of role clarity and fiscal uncertainties, that shape the capacity of individual clinicians to adopt research recommendations. Such observations have important implications for health planning and practice by identifying potential avenues to optimize the knowledge translation process. The next and final chapter will explore such implications of these findings pursuant to the goal of aligning the knowledge translation process with learning processes and environments of clinicians, as well as improving patient care.

Chapter 4.

Implications & Conclusions

This thesis used a novel qualitative meta-synthesis approach to examine the role of individual, inter-professional, and institutional influences in shaping the learning processes and environments of clinicians and, in turn, the uptake of evidence-based recommendations in hospital settings in OECD countries. In Chapter 1, it was noted that, although knowledge translation interventions have received considerable attention within the research literature, current understandings of influences shaping the implementation of these interventions have proven insufficient. As a result, a considerable “research-to-practice” gap persists in hospital settings. In Chapter 1, I argued that synthesizing qualitative studies that focus on the uptake of research evidence among physicians and nurses in hospital settings has considerable potential to generate more textured understandings of influences on their learning processes and learning environments. This chapter further argued that a synthesis of qualitative literature could be instructive in identifying how educational interventions delivered as part of knowledge translation interventions could be aligned with the learning needs and environments of clinicians, as well as provide direction to policymakers, health administrators, and clinicians concerned with narrowing the “research-to-practice” gap. Chapter 2 provided an overview of qualitative synthesis approaches and outlined the specific methods employed in this qualitative synthesis. This chapter argued that qualitative meta-synthesis methods are uniquely positioned to generate insights into influences on the learning processes and environments of clinicians by exploring how these unfold across hospital settings. Of critical importance is that these insights are informed by the experiences of clinicians and contexts in which they occur. Furthermore, this chapter outlined how this focus on learning processes and environments could be explored across individual, inter-professional, and institutional contexts.

Chapter 3 presented a detailed account of the findings of this qualitative synthesis. With respect to the individual-level dimensions of the knowledge translation process, these findings show that clinicians challenged the ‘evidence’ in evidence-based recommendations and positioned it alongside other forms of knowledge in their clinical decision-making. In doing so, clinicians challenged the biomedical authority of research by emphasizing the importance of constructivist – and in particular experiential – ways of knowing in deciding how to best care for patients (Terwel, 1999; Thomas et al., 2014). This theme further underscores that clinicians must be willing to adopt research recommendations in response to clinical challenges in order research adoption to occur. However, this was not always the case because of the aforementioned tensions regarding what constitutes ‘evidence’, as well as the perceived responsiveness of evidence-based practices to clinical challenges.

These findings also suggest that clinician’s prior learning experiences and engagements with evidence-based medicine and education were important in preparing them to make changes to their clinical practice. This was because they were accustomed to ‘learning by doing’, reflecting on their ‘frames of reference’ or clinical practices to make changes to incorporate new, relevant knowledge. At the inter-professional level, this qualitative synthesis underscored the importance of ‘champions’ – that is, clinical leaders responsible for encouraging research adoption – in supporting the implementation of evidence-based recommendations, particularly when their role within the hospital setting allowed them to promote research adoption at multiple levels. In addition, the degree of ‘role clarity’ – that is how clinicians understood their roles and responsibilities vis-à-vis evidence-based practices – was an important determinant of whether research was adopted. This was further optimized through inter-professional communication, such as ongoing dialogue between clinicians surrounding patient care.

At the institutional level, the capacity of clinicians to adopt evidence-based recommendations was heavily influenced by the responsiveness of knowledge translation interventions to the local context, and in particular their alignment with administrative goals, their adaptations to local cultures and resources. Finally, this qualitative synthesis outlined how fiscal uncertainties in hospitals settings, themselves

stemming from the emphasis under neoliberal regimes to 'do more with less', constrained the capacity of clinicians to implement evidence-based recommendations.

4.1 Unique Contributions

4.1.1. Tensions surrounding the 'evidence' of evidence-based recommendations

This thesis underscored how the responses of clinicians toward the 'evidence' underlying evidence-based recommendations was an important determinant of research adoption. Previous commentaries and editorials have suggested that positivist assumptions underlying knowledge translation interventions marginalize experiential knowledge and other forms of knowledge (Cornelissen et al. 2009; Reimer-Kirkham et al., 2009). However, the empirical literature has overlooked the potential role of this dynamic in influencing research adoption. As a consequence, researchers have tended to attribute "poor research uptake" to the "knowledge deficits" of clinicians (Lyons & Warner, 2005; Wiechula et al., 2009) rather than considering how people's critical interpretations of evidence frame learning and the implementation process. This synthesis of the qualitative literature on the implementation of knowledge translation interventions in hospitals thus generates unique insights into how diverse understandings of, and attitudes toward, research 'evidence' among clinicians serves as a critical determinant of research adoption. These findings thus challenge the common assumption that improving familiarity with research 'evidence' alone will be enough to promote the uptake of evidence-based recommendations, and point to the need to rethink how research 'evidence' is positioned alongside other forms of knowledge.

Importantly, this thesis makes a unique contribution to the knowledge translation literature by identifying evidence itself as a site of conflict. Of particular importance is that tensions stemming from challenges to the scientific authority of research evidence involved the assertion of alternate ways of knowing. Specifically, clinicians expressed that understandings of best practices in clinical care were constructed through the process of engaging with their patients to meet their needs. In turn, this thesis found that these constructivist paradigms served to challenge the knowledge translation process. Clinicians challenged the authority of scientific knowledge through reflexivity about the

methodological limitations of research ‘evidence’, such as by questioning the generalizability or transferability of research findings. This illustrates how processes central to adult learning, such as critical reflection and learning by doing or meaning-making through experience (Kolb, 2014), may themselves be inconsistent with the emphasis that knowledge translation interventions place on ‘compliance’. Indeed, the degree of reflexivity exhibited by clinicians in the studies included in this synthesis is consistent with adult learning theories of experiential and transformational learning, common in continuing education within the health professions (Johns & Freshwater, 2009). As outlined in Chapter 1, experiential and transformational learning approaches have been widely integrated into undergraduate and post-graduate medical training and clinicians are likely to be familiar with these approaches. As suggested in the articles included in this synthesis, the emphasis clinicians placed on ‘learning by doing’ through critical reflection, and the construction of new frames of reference, is not reflected in the content or approach of knowledge translation interventions in a meaningful way. This dynamic suggests that the key challenge faced by those seeking to implement evidence-based recommendations might not be ‘evidence’ alone, but rather how it is presented to clinicians.

Indeed, the findings of this synthesis suggest that critical reflection was often considered inconsistent with the ‘scientific authority’ of knowledge translation interventions. This suggests the need to rethink these interventions and better align accompanying educational programming with the needs of clinicians to optimize the knowledge translation process. As discussed in more detail below, greater attention to how evidence can build upon or complement experiential and local knowledge represents one possible way to promote research adoption. Here, there is cause to consider that the epistemological discontinuities between knowledge translation interventions, on the one hand, and adult learning processes on the other, are created through the delivery of educational programming grounded in positivism. That is, knowledge translation interventions emphasize ‘compliance’ at the expense of considering how the knowledge translation process unfolds among clinicians as adult learners in the real world contexts of hospital wards. These choices not only reflect potential power disparities among those involved in the knowledge translation process between researchers and frontline clinicians, but also constrain the adoption of new and

potentially life-saving clinical practices. In order to fully achieve advancements in the successful integration of research-based recommendations into hospital settings, fundamental changes to how knowledge translation interventions are developed and implemented are required. Such changes are likely to imply a paradigm shift that allows for 'slow' interventional approaches sensitive to the needs of clinicians and contexts in which they provide care (Adams, Burke & Whitmarsh, 2014). This would represent a significant shift from the continued emphasis on 'efficiency' and 'speed' in healthcare delivery, but might prove more successful in bringing about comprehensive improvements in patient care.

4.1.2. 'Role clarity' as a key determinant of research uptake

There is widespread recognition that the implementation of evidence-based practices recommendations in hospitals involves clinicians in diverse roles, such as nurses, physicians, and medical specialists, and across a range of practice settings, from emergency departments to surgical wards (Lavis, 2006; Mitton et al., 2007). This qualitative synthesis expands upon this literature by demonstrating the importance of role clarity across these groups of clinicians and settings in shaping research adoption in hospitals. This thesis defined 'role clarity' as the extent to which roles and responsibilities relating to changes in clinical practices were communicated clearly to and understood by clinicians. This applied to clinicians not only in the ward implementing changes but also those in other hospital settings that they regularly come into contact with in providing care. This demonstrates the need to not provide educational support to wards implementing practice changes, but to work with clinicians across hospital settings to their familiarity with practice changes.

While expanding the scope of interventions beyond the immediate implementation setting to reach a greater number of clinicians is important, this synthesis further demonstrated the important role of 'champions' in promoting role clarity and facilitating critical reflection. As outlined, these were typically more senior clinicians who advocated for and supported the implementation of knowledge translation interventions, in some cases by appealing to their positional authority or experiences. There is considerable evidence that such champions are important to the knowledge translation process (LaRocca et al., 2012; Ward, House & Hamer, 2009), but their

specific contributions to research adoption have been under-theorized. This thesis builds upon this literature by demonstrating how champions promote research adoption by clearly and effectively communicating roles and responsibilities to clinicians implementing knowledge translation interventions in hospitals, and in particular to hospital administration and clinicians outside of the immediate implementation setting. By identifying the promotion of 'role clarity' as a core task of 'champions, this synthesis moves in the direction of more clearly defining their role in the knowledge translation process and, thereby, optimizing the implementation of knowledge translation interventions. Furthermore, through their role in providing direct educational interventions and prompting reflection among clinicians, champions played a critical role in bridging the gap between the content of evidence-based recommendations and the learning processes (experiential or transformational learning) of clinicians. Although professional authority often allows champions to advocate for practice changes, my findings further demonstrated that these individuals often emerge naturally by demonstrating leadership in their settings. As such, identifying 'natural' champions in any given setting is likely critical to the knowledge translation process, it would be promising to support these individuals through training in adult education approaches.

4.1.3. Institutional barriers to knowledge translation

Finally, while financial constraints have been previously identified as a barrier to the adoption of evidence-based practices (Grol & Wensing, 2004), considerably less attention has been paid to how clinicians navigate financial uncertainties in the context of knowledge translation interventions. This issue is of particular importance because the ongoing neoliberalization of hospital care increasingly requires clinicians to "do more with less" (Bergmark, 2008; Benoit et al., 2010). In this regard, this thesis makes an important contribution to the literature by outlining how clinicians navigate resource constraints and uncertainties within learning environments in hospital settings. On the one hand, findings of this synthesis support research that demonstrates how resource constraints such as inadequate staffing and insufficient resources devoted to training can undermine research adoption, particularly in demanding environments such as emergency departments and surgical wards. However, this thesis demonstrates that clinicians often perceive the 'extra' time or training necessary to implement evidence-

based practices as a barrier to the knowledge translation process due to competing pressures and resource limitations, among other factors. These resource pressures can undermine learning processes, such as critical reflection and the development of new frames of reference, by limiting space for experimentation and critical appraisal of recommended practices. As a consequence, this thesis points to the urgent need to consider when planning knowledge translation activities, the everyday pressures imposed on clinicians within their practice environment. Where possible, this should involve consultations to determine how these interventions can respond to these constraints and provide space for learning. Particularly important is the recognition that educational programming delivered as part of knowledge translation is done within a learning environment structured by social and institutional influences, such as resource constraints and staffing pressures. Responding to the particularities of learning environments by integrating time and space for critical reflection into daily care activities is thus key to supporting research adoption.

Additionally, this thesis builds upon the knowledge translation literature by demonstrating how clinicians in hospital settings respond to these financial pressures by demonstrating the cost effectiveness of changes to clinical practice. That clinicians must do this to garner resources and support from hospital administration only further underscores the priority placed upon financial considerations over improvements in clinical care and patient outcomes. This suggests the need to attend to how the roles of clinicians continue to evolve under the constraints imposed upon them by health systems restructuring, and the increased emphasis on factors unrelated to patient care. These findings thus raise important questions about the future directions of hospital care and knowledge translation, most notably whether hospitals will be able to fulfill their historical role of prioritizing patient care within the nexus of concern for evidence-based practice and financial austerity.

4.2 Limitations

While the limitations of qualitative synthesis approaches were reviewed in brief in Chapter 2, there are several limitations specific to this thesis that should be considered when interpreting its findings. Many of the articles included in this synthesis did not

describe their study methods or theoretical perspective in detail. While this is common among articles published in health sciences journals, particularly those appearing in outlets with limited word counts (3000 words or less), it made it difficult to account for the potential role of methodological or epistemological assumptions in influencing interpretations of clinicians' experiences. Similarly, some of the articles included in this synthesis did not include the firsthand accounts of participants, which made it necessary to rely solely upon interpretations of clinicians' experiences when interpreting their findings. While some researchers exclude articles that do not include firsthand accounts when conducting qualitative syntheses, it has been argued that researchers should prioritize the potential contribution of articles to the analysis over minor methodological shortcomings (Dixon-Woods et al., 2006). Following Geertz (1973), these articles were deemed to include sufficiently 'thick descriptions' of clinicians' experiences, and, therefore, merit inclusion in this synthesis.

There are several considerations relating to the interpretation of the included articles that warrant mention. Several articles included in this synthesis examined the same knowledge translation intervention (Bradley et al., 2004; Bradley et al., 2005). While the overrepresentation of articles describing experiences with this specific was taken into consideration during the analysis by considering these articles as one 'unit', it remains possible that this may have overemphasized certain influences of the knowledge translation process.

It should also be noted that while the scope of this synthesis was strengthened by the diversity of hospital settings represented in the selected studies the process of synthesizing these articles meant that individual, inter-professional, and institutional influences specific to these settings were not always reflected in the findings. For example, several studies focusing on surgical interventions discussed dynamics, such as observed learning, specific to that discipline that were difficult to account for in the larger analysis. In the future, as more qualitative studies on knowledge translation interventions in specific areas become available, it may be possible to tease out these themes more clearly. In addition, while a systematic search strategy was employed, relevant articles might have been overlooked and, therefore, not included in this synthesis.

4.3 Recommendations

4.3.1. *Reconciling 'evidence' and other forms of knowledge*

This thesis illustrated that *how* clinicians position research 'evidence' alongside other forms of knowledge is important in shaping the uptake of evidence-based recommendations. There is thus a need to explore how research evidence can be reconciled with local and experiential knowledge to promote the success of education oriented to knowledge translation. Researchers and others involved in the implementation of knowledge translation interventions have overemphasized the need for compliance with evidence-based recommendations. This has been done at the expense of exploring ways in which research evidence can be employed to complement the ways that people learn and existing knowledge when promoting changes to clinical practice. There are epistemological tensions between positivist views of evidence as objective knowledge to be followed without question and constructivist learning theory that draws attention to the need for critical reflection as part of the learning process. However, there is still important work that can be done to reconcile these forms of knowledge to ensure the best possible patient care. Importantly, while researchers commonly assess the views of clinicians in the implementation setting when they design knowledge translation interventions, they have a tendency to position local and experiential knowledge as a barrier to change. That is, it is viewed as something that must be 'overcome' through training and education on 'proper' practices. The findings of this synthesis suggest the need to adopt a more nuanced approach to learning and to explore how evidence-based recommendations can compliment and even be strengthened by local and experiential knowledge.

Following thesis findings demonstrating that flexibility and adaptability facilitate the uptake of new research knowledge in clinical settings, researchers and others involved in knowledge translation interventions would benefit from adopting the concept of 'degrees of compliance' rather than positioning compliance as absolute. In doing so, they might be better able to accommodate local and experiential knowledge while simultaneously working toward the promotion of research adoption. Such a change will likely require a reconsideration of how the effectiveness of knowledge translation interventions is evaluated, an important issue that was beyond the scope of this thesis.

Additionally, knowledge translation interventions could be more successful by providing opportunities for clinicians to develop experiential knowledge relating to the evidence-based recommendations prior to their implementation in hospital settings. While information regarding the educational component of knowledge translation interventions remains limited (outlined in greater detail in Section 4.4.2), the available information suggests that these interventions seldom provide opportunities for clinicians to ‘test’ the feasibility of evidence-based recommendations before they are expected to implement them in their clinical practice. This means that clinicians are seldom given opportunity to develop experience with evidence-based recommendations in ‘low-stress’ situations. This is problematic given concerns regarding adverse patient outcomes and legal liabilities when practices are ‘untested’. Within this context, it is perhaps unsurprising that clinicians continue to provide clinical care situated within their existing frames of reference, which they know are ‘safe’, in contrast to new, potentially risky practices. Following Kolb (2014), using a combination of roleplaying and medical simulation to provide clinicians with opportunities to learn by doing represents one possible avenue for enabling clinicians to gain familiarity with new practices. However, of critical importance is that these experiential learning opportunities be accompanied by learning activities that prompt clinicians to reflect on how these new practices can (or perhaps cannot) be applied in their setting. Such an approach can benefit patient care and the uptake of research by: a) fostering experiential knowledge that is complimentary to recommendations; b) remaking the frames of reference of clinicians by directly challenging their assumptions surrounding patient care in a ‘safe’ place; and, c) strengthening evidence itself by subjecting it to the critical appraisal of diverse clinicians. Growing evidence of the role of medical simulation tools in improving clinical practice (Okuda et al., 2009) only further supports this recommendation.

4.3.2. Increased transparency of educational interventions

As outlined elsewhere in this thesis, only limited information is available regarding the nature of education and training delivered as part of knowledge translation interventions. While this severely limits opportunities for education researchers to contribute to the advancement of the knowledge translation field, it is also in stark contrast to the growing emphasis placed on ‘open data’ and transparent research

processes in the health sciences. New mechanisms, such as clinical trials registration databases and open data requirements (Boulton et al., 2010; De Angelis et al., 2004), have been implemented in the health sciences over the past decade to increase the transparency of and, thereby, public trust in research findings. Extending these 'open' information policies and practices to knowledge translation interventions through the development of an intervention registry and curriculum repository has considerable potential to improve the knowledge translation process. Alternatively, journals should consider requiring articles published on knowledge translation interventions to include this information as supplementary online materials.

The availability of this information would allow researchers and clinicians to better evaluate the transferability of knowledge translation interventions to their setting, and to adapt education and training interventions to the particularities of their practice environment. Such changes could allow education researchers to undertake studies that mobilize their expertise to improve patient care, contributing to the continued development of the knowledge translation field. For example, this thesis was unable to assess whether knowledge translation interventions were responsive to the needs of adult learners; 'open' information approaches would enable education researchers to explore the pedagogical underpinnings of intervention curricula. It might then be possible to consider this information alongside published evaluations to generate additional insights into the effectiveness of particular pedagogic approaches and their suitability to the learning processes and environments of clinicians. Additionally, education researchers and outcome scientists would be better positioned to determine, compare and decide upon the relative effectiveness of intervention curricula, promoting more efficient use of scarce health care resources.

4.3.3. Future Research

The thesis has several important implications for future knowledge translation research. First, despite the fact that tensions between research 'evidence' and other forms of knowledge were critical determinants of research adoption, there remains a need for a more complete understanding of the decision-making processes of clinicians working in hospitals implementing knowledge translation interventions. While this dynamic emerged as important across hospital settings, there are no existing studies (to

the best of my knowledge) that have focused explicitly on this dynamic. Research focusing on attitudes toward research evidence and eliciting perspectives on how these attitudes shape clinical decision-making would expand upon the findings of this synthesis and inform knowledge translation interventions by identifying additional in which these tensions can be reconciled. Studies employing an adult learning theory lens to examine how clinicians develop and mobilize understandings of clinical care would be an important component of this research agenda. Second, although this synthesis found that previous training in evidence-based medicine improved willingness to adopt evidence-based practices, there remain important questions about the content of evidence-based medicine curricula and its role in promoting research adoption. As a preliminary step in this direction, a scoping review of the integration of evidence-based medicine into nursing and medical schools and post-graduate clinical training programs is needed to determine the state of current curricula. It will then be possible to undertake targeted studies in a comprehensive manner that elicits the perspectives of trainees regarding curricula and its impact on research adoption. Such research is likely to prove important in identifying ways to improve medical training to better prepare clinicians to practice evidence-based medicine. Third, whereas studies included in this synthesis underscored how poor inter-professional communication and role clarity interfered with research adoption, these studies reflect only the experiences of clinicians involved in implementing evidence-based recommendations. Additional research is needed in hospitals to explore how clinicians outside of the implementing ward or department view changes in clinical practice, which has the potential to identify unique influences on research adoption. Ethnographic studies undertaken in hospitals implementing knowledge translation interventions might be uniquely suited to such questions of systems-level and inter-professional dynamics of research adoption. Finally, this thesis identified institutional influences on the learning environments of clinicians and thus research adoption in a broader sense, such as fiscal uncertainties, adaptability to the local context. However, the studies represented in this synthesis did not consider how macro-level factors, such as specific health policies and regulatory frameworks, shape the capacity of clinicians to implement evidence-based recommendations. Additional studies are needed that explore in more detail than provided here, macro-level factors that influence the micro-level practices of clinical care and decision-making of clinicians. This is of particular importance in areas in which socio-political influences might impact

clinical care, as is be the case in regards to reproductive health care, harm reduction, and end-of-life care, among others.

4.4 Conclusion

This thesis sought to conceptualize individual, inter-professional, and institutional influences on learning processes and environments in relation to the implementation of evidence-based practices in hospital settings. In doing so, it sought to identify potential pathways for optimizing the knowledge translation process by aligning interventions with the learning processes and environments of nurses and physicians pursuant to the goal of improving patient care. This thesis demonstrated that individual and extra-individual factors impede the adoption of evidence-based practices, including tensions concerning what constitutes 'evidence', lack of role clarity among clinicians, and resource constraints. However, it also outlined the various steps taken by clinicians to overcome these challenges and pursue evidence-based practice changes in ways that align with how they learned, such as critical reflection and obtaining support from practice champions, as well as to negotiate constraints imposed by hospital settings, such as demonstrating cost effectiveness. Although these findings can in no way fully account for the complexities of knowledge translation processes, they suggest how adult learning theory can be integrated into knowledge translation interventions and further bridg the gap between research and practice. Ultimately, such educational activities can improve knowledge translation process and bring about more comprehensive improvements in patient care

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