

ATHABASCA UNIVERSITY

EMBEDDING AIRBORNE INFECTION PREVENTION BEST PRACTICES IN LONG-  
TERM CARE HOMES:

AN IMPLEMENTATION BLUEPRINT

BY

RALPH STEVEN GANTER

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### **Approval of Dissertation**

The undersigned certify that they have read the dissertation entitled

#### **EMBEDDING AIRBORNE INFECTION BEST PRACTICES IN LONG-TERM CARE HOMES: AN IMPLEMENTATION BLUEPRINT**

Submitted by:

**Ralph Ganter**

In partial fulfillment of the requirements for the degree of

#### **Doctor of Business Administration**

The examination committee certifies that the dissertation and  
the oral examination is approved

**Supervisor:**

Dr. Kam Jugdev  
Athabasca University

**Committee Members:**

Dr. Jessica Good  
Athabasca University

Dr. Jennifer-Lynn Fournier  
Laurentian University

**External Examiner:**

Dr. Sherry Dahlke  
University of Alberta

January 26, 2026

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Finally, this work was inspired by those past, current, and future residents of long-term care homes. Clearly, as a community, we must endeavour to protect your dignity and your safety at all times. It is my hope that this work provides concrete action toward this aim.

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## Abstract

Despite deliberate attention and dedicated resources devoted to infection prevention in long-term care (LTC) homes during the COVID-19 pandemic, patient-focused infection-related outcomes in the LTC sector varied significantly. This study sought to devise a set of approaches and recommendations to support more consistent application of infection control procedures among the frontline LTC home workforce in an effort to strengthen patient-focused outcomes.

With a focus on management intentions and implementation practices, this research highlights critical implementation factors most likely to support the uptake of infection prevention behaviours consistent with best practices key to mitigating airborne infections. The research also strives to enable healthcare leaders to be cognizant and attentive to these factors as they go forward with future change management efforts and to provide tools for implementation.

This study is guided by the research question: How are evidence-informed infection prevention best practices for transmissible airborne diseases prospectively implemented by leadership into frontline LTC home workers' practices? Using a thematic analysis of the experiences of LTC home leaders and Infection Prevention and Control Leads (IPAC), I found that key concepts related to the successful implementation of infection control practices in LTC included leadership activation drivers, functional roles and supportive entities, competency development, achieving compliance, dissemination methods, contingency development, alerting worker attention and the power of reflecting and reinforcing best practices. This research also provides the reader with a cadre of promising practices and a blueprint of measures and activities for the implementation of best practices.

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Ultimately, this research contributes to best practices intended to restore public confidence in safe institutional LTC home environments for our society's elderly population. By providing leaders with a knowledge of implementation factors critical to best practice uptake, LTC home infection outcomes should improve, and more residents will be able to live longer with safety and personal dignity.

*Key Words:* airborne infections, best practices, thematic analysis, implementation science, change management, long-term care, infection prevention and control lead, driver diagrams, and critical factors.

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## **Acronyms and Abbreviations**

AHRQ – Agency for Health Care Research and Quality

BPE – Best Practice Evidence

CIHI – Canadian Institute for Health Information

COVID-19 – Coronavirus Disease 2019

CVC – Central Venous Catheter

Donning and Doffing – Putting on and Taking Off Personal Protective Equipment

HAI – Healthcare Acquired Infection

HCP – Healthcare Provider

IS – Implementation Science

LTC – Long-Term Care Home

MOH – Ministry of Health

NPT – Normalization Process Theory

OLT – Organizational Learning Theory

RN – Registered Nurse

SARS – Severe Acute Respiratory Syndrome

SCARF – Social Qualities of Status, Certainty, Autonomy, Relatedness, and Fairness

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## Chapter One: Introduction

### The Phenomenon of Study

As the Canadian population ages, one can anticipate that long-term care (LTC) home settings will continue to have a significant profile within the healthcare services continuum. As a pillar of the health care system, public confidence, reliability, and trust in LTC services are paramount. Unfortunately, with the recent pandemic and spread of the COVID-19 virus in LTC homes, public confidence has been shaken. According to the Canadian Institute of Health Information (CIHI) in 2020, 81.1% of all COVID-19 deaths were observed in LTC homes in Canada (Betini, et al., 2021). As of December 31, 2022, more than 4000 COVID-related deaths had been reported in Ontario LTC homes (data.ontario.ca, 2023).

However, a proportion of Ontario LTC homes have quietly shown consistency, reliability, and adaptability in preventing or addressing infectious events such as COVID-19 through superior infection prevention practices (data.ontario.ca, 2023). While all LTC homes in Ontario had access to Public Health Ontario infection prevention guidelines, these homes presumably engaged in more effective approaches to best practices implementation and achieved greater success in containing the COVID-19 virus. Why were some LTC homes more successful than others in controlling the spread of the COVID-19 virus? What did these LTC homes do differently? What can we learn from those higher-performing LTC homes? The following dissertation moves forward to present research findings that explore answers to these questions.

This study focused on a selection of LTC homes in Southwestern Ontario. Meanwhile, these findings could be applied to LTC homes across the broader geographic area. The selected LTC homes in Southwestern Ontario provide insights that can be potentially scaled into the larger LTC home context.

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## Why write this dissertation?

The impact of infection is profound in LTC homes. Whether it manifests as death, comorbidity or as an unsatisfactory resident/family experience, the societal costs are simply too high. I believe preventing infection in the elderly is possible with a coordinated, systematic, disciplined and evidence-based approach. Hence, this research was motivated by the above phenomenon, questions, and the following considerations. First, the extant literature describes numerous implementation approaches for infection prevention in acute care and critical care unit settings; however, literature on LTC mechanisms to embed infection control best practice strategies appears less prevalent. Second, this research is important given that airborne viruses are not a new phenomenon to the LTC population as dangerous airborne infections, like COVID-19, will continue to present in congregate settings such as LTC homes (Sorrell et al., 2021). Third, as the ‘baby boom’ population continues to age within Western society, public demand will increase for safe LTC capacity, especially for seniors and those individuals who are frail and physically compromised (Peak, 2021). Fourth, this research initiative is timely as there is a continuing discussion in Canada on increased LTC capacity, national LTC standards, and improved policies to protect seniors considering events such as COVID-19 (Estabrooks et al., 2020). Finally, this research work is also important as an augment to the continued efforts to protect LTC staff, to make LTC staff feel safe, and to feel valued, since LTC staff provide essential services to frail and physically challenged residents.

To reiterate, the intent driving this research is to contribute to the best practice infection prevention implementation knowledge available to LTC home settings. My intent is to create a clearer understanding of what mechanisms, factors, or approaches enable a population of LTC homes to succeed at infection prevention implementation during major infection and/or

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pandemic incidences. With the application of this knowledge, the LTC home field is better prepared to implement infection prevention protocols most likely to succeed and to avoid the tragedy of unnecessary deaths from future community-acquired airborne infectious events.

Finally, this study is written to address the requirements of the DDBA program. This study is intended to be an enabler for the healthcare management, healthcare leadership, and the stakeholders of healthcare policy charged with designing, administering, and governing a complex system that is in continuous pursuit of creating the best possible outcomes for a target population. Using management-oriented theory and management-oriented concepts, healthcare leaders will have the license to draw upon those management practices that facilitate the creation of sound strategies and value-added implementation. In essence, this study takes the evolving management knowledge, skills and abilities related to implementing best practices and applies these concepts to a specific clinical focus in a dynamic healthcare context.

### **Why study best practice implementation?**

From my perspective, it is imperative to study best practice implementation to enhance the understanding and provide awareness of the essential or critical factors that lead to improved development, management, and sustainability of infection control competencies acquired by healthcare workers. These improvements and enhancements will lead to the objective of consistently protecting residents from infectious events. By examining this study, healthcare leaders will be able to learn of additional mechanisms and approaches to consistently apply and integrate the best practice implementation factors essential to improve resident outcomes, thus rehabilitating the public's confidence in the LTC system.

Moreover, as change management mechanisms, best practice implementation approaches require study to address the following questions. 1) How can the most relevant and current best

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practices in infection prevention immediately become available and implemented by the front-line staff? 2) How can opportunities be identified to systematize and standardize knowledge exchange and skill training in infection prevention? 3) How can attention to best practice learning techniques by organizational leaders generate a safer environment for LTC residents, workers, and families? 4) What mechanisms and processes will give local healthcare teams, in general, the skills to generate quality improvement strategies that best fit the local context?

To comprehensively address the above questions, this research study drew upon socio-adaptive approaches as a set of activities that pragmatically augment infection control practices as well as workforce expertise in healthcare settings into mechanisms or approaches essential to improved performance. Further, this study informs the overarching research question: **How are evidence-informed infection prevention best practices for transmissible airborne diseases prospectively implemented by leadership into frontline LTC home workers' practices?** By exploring this research question and applying the insights to the current body of knowledge, the solution to consistently introducing, transferring, spreading, managing, and sustaining improved infection control as well as resident safety practices will be further advanced and potentially generalized in the LTC field.

### **How to study best practice implementation in LTC homes critically?**

Given a paucity of work in the literature describing best practice implementation in LTC homes (see Chapter Three), this work may be considered exploratory. Hence, the study of best practice implementation emerges from the critical examination of a subset of essential implementation approaches that can be described as mechanisms or critical factors. These mechanisms or factors act as mediators to manage the change of front-line worker practice-related behaviour and as the elements of a comprehensive process required to enable the

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integration of evidence-based interventions. Using the theoretical lens of Normalization Process Theory and an implementation science approach, a construct can emerge that determines, from the literature and from the observation of clinical practices, the key factors important for the process of implementation of best practices. Thus, by examining the available evidence, an analysis of the presence of key critical factors in LTC homes' best practice implementation efforts and the process used to incorporate the implementation factors into the work environment, a blueprint for implementing best practices can be conceptually established.

### **What is my contribution to the literature?**

This study contributes to the existing body of knowledge in several ways. First, it takes a novel theoretical improvement approach, implementation science, and goes further by applying implementation science foundations to the LTC field. Second, this study allows for an improved understanding of approaches which will contribute to the well-being of the workers who support the care of frail elderly seniors by targeting a safer work environment for staff, enabling sensemaking and feelings of adding value to the healthcare system, as well as by developing behaviours that contribute to safety in the workplace. Third, this study contributes and builds on key healthcare improvement processes such as incorporating new information into the work environment; integrating new evidence-based practices; effectively establishing new routines; improving learning system elements such as measurement, personal accountability, communication, and transparency; as well as improving interactions between leaders and the front-line workforce in a goal-oriented and integrated manner. Fourth, this research work benefits the healthcare system by establishing LTC as a safe, effective, and dynamic pillar within the continuum of care. Fifth, this research will ultimately contribute by extending safer care practices to other residential senior services contexts such as assisted living, palliative care, and

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congregated living environments. Sixth, this research will help to restore and grow public and government confidence in LTC homes as effective institutions that add value to society and are worthy of family trust and future investments.

Finally, the anticipated results that emerge from this study build on the insights from the literature by Dixon-Wood et al. (2011), Frankel et al. (2019), and Sreeramoju (2019) that detail healthcare quality improvement as it pertains to infection prevention. These researchers provided awareness of the socio-adaptive mechanisms and change management elements critical to improvement in health care service. This research's study of best practice implementation, ultimately provides an improved framework for the evolution of planned behaviour change in LTC settings and can concurrently enable the generation of improved outcomes for the vulnerable LTC population impacted by infectious events.

In advancing the existing body of knowledge on best practice implementation, this study first examines the background and context of LTC homes. Then, in Chapter Two, it examines the theoretical frameworks of: Organizational Learning Theory, Normalization Process Theory, and Implementation Science approaches. Chapter Three, the Literature Review, discusses the barriers to infection prevention implementation, hand hygiene and occupational health, and then examines eleven implementation factors, their definitions, descriptions, and their characteristics as they relate to implementation approaches. Later, in Chapter Four, this study provides the methodology used for my research activities, followed by Chapter Five: Findings. I conclude with Chapter Six: Discussion, which enlightens the reader on a conceptual framework, implementation recommendations, and measures for leaders to consider in practice change initiatives.

# EMBEDDING AIRBORNE INFECTION PREVENTION BEST PRACTICES IN LONG-TERM CARE HOMES: AN IMPLEMENTATION BLUEPRINT

## **Background and Context for this Research**

This section of the dissertation describes the services, resident characteristics, and workforce characteristics of LTC Homes in Ontario. This is followed with a context that sets the stage for the importance of the research.

### **What does a LTC home offer in terms of services and who is eligible?**

In Ontario, LTC homes are licensed, regulated, and funded by the provincial government. Regulated LTC homes in Ontario are required to provide private and semi-private rooms, full wheelchair access, housekeeping, meals, laundry, social activities, recreational activities, shared dining rooms, common areas, help with all daily activities, access to 24-hour nursing care, and 24-hour personal care (Government of Ontario, 2024). According to the Government of Ontario (2024), to be eligible for care in a regulated provincial LTC home, an individual needs to be eighteen years or older and have an Ontario Health Insurance Plan card. Eligibility is also based on care needs. An individual would require the need for 24-hour nursing care and personal care. Further, the individual would require a need for assistance in activities of daily living, on-site supervision and/or monitoring, and an assessment that identifies the individual's needs cannot be managed by another caregiving support or organization in the community (Government of Ontario, 2024). Once eligible, as a resident of a long-term care home, a plan of care is created to address the individual's health condition, the medications needed, dietary requirements, fall risks and mitigations, exercise requirements, and religious preferences (Government of Ontario, 2024).

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### What roles are observed in LTC homes?

To support LTC home services as well as resident-focused plans of care, several distinct roles are required in LTC homes. These roles include an administrator, a director of nursing, a medical director, registered nurses, personal support workers, recreational staff, and other ancillary professional services (Gillese, 2020). A LTC home administrator provides the necessary oversight for all LTC home operations such as logistics, reporting, resource management and compliance with LTC home regulations (Gillese, 2020). The administrator also has the role of working with other partners such as Public Health Ontario to maintain acceptable health standards. According to Gillese (2020), LTC homes have a 'Director of Nursing' who is a registered nurse tasked with supervising and directing the nursing and personal care staff. Meanwhile, the medical director role at a LTC home provides overall medical oversight for the admitted residents while allied health professionals such as social workers, occupational therapists and physiotherapists provide ancillary services based on the resident's plan of care (Gillese, 2020). A critical role in LTC homes, personal support workers, provide personal services such as bathing, meals, routine daily activities, and housekeeping (Gillese, 2020). Finally, recreational staff provide for social, physical, and interpersonal activities (Gillese, 2020).

Across Ontario, the largest proportion of employees in LTC homes are personal support workers (58%), registered nurses (25%) and allied health (12%) (Gillese, 2020). The personal support workers population is primarily 35 – 54 years old (50%) and 55 years old or older (25%). Of the personal support workers, 41% are full-time, 48% are part-time, and 11% are casual (Gillese, 2020). Meanwhile, the average registered nurse (RN) is 42.4 years old and

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approximately 40% of RNs are full-time, 41% part-time, and 19% are casual. 30% of registered nurses work at two or more jobs (Gillese, 2020).

### **How does the resident population present in LTC homes?**

According to Gillese (2020), on average, residents in LTC homes are approximately 84 years old and 81% of the resident population are observed as having some type of cognitive impairment. Often, residents have advanced or ongoing conditions requiring multiple therapies and drug therapies to manage these conditions (Gillese, 2020). Residents also commonly have activities of daily living impairments, cognitive impairment, wandering, and/or other behavioural problems (Gillese, 2020).

From an infection prevention perspective, according to Public Health Ontario (2020), senior administration of a LTC home must support the implementation and execution of the home's infection prevention program. LTC homes must have trained infection prevention practitioners proportional to the size and case mix of the LTC home population (Public Health Ontario, 2020). Further, the LTC homes typically have a nurse in the infection control practitioner role with registration in the Ontario College of Nurses and with certification in infection control (City of London, 2024; Eventide Home, 2024; Schlegal Village, 2024 ).

Given the above population characteristics, frail seniors are clearly at risk in LTC homes and the impact of an infectious event can be especially profound. For example, Dekker et al. (2020) stated “healthcare acquired infections (HAI) are the most frequent adverse events for patients and an important cause of morbidity and mortality” (p. 1). Roberts and Casey (2004) noted that LTC residents are “particularly susceptible to infection because of the presence of potential risk factors associated with age, medical devices, specific treatments, medication, and

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living in a communal setting” (p. 166). Brown et al. (2021) observed that LTC deaths arose from the high risk of contracting infection due to the congregate living environment, staff exposure, advanced age, multimorbidity, and difficulties in physical distancing due to cognitive and functional impairment factors. Further, in the context of the most recent COVID-19 pandemic, Brown et al. (2021) observed that LTC home deaths comprised between 66 and 81 percent of COVID-19 deaths in Canada and LTC home residents were five times more likely to die of COVID-19 compared to community-dwelling older adults. In essence, LTC homes are a unique setting whose patient population experiences significant impact from infectious events.

However, attempts have been made to successfully address several of the above issues. Current recommendations for LTC home infection prevention include frequent testing, face mask use, visitor restrictions, hand hygiene, personal protective equipment, the cohorting of individuals with known infections, and targeting adequate ratios of full-time staff who would work at a single rather than multiple homes (Brown et al., 2021). Despite these recommendations, LTC home deaths from the pressure of COVID-19 infections remained ominous and the results of the implementation of the recommendations were uncertain.

Furthermore, it has become apparent that recommendations and guidelines, such as those identified in the previous paragraph, are not consistently implemented. Neta et al. (2017) identified “the consistent failure to translate research findings into practice has resulted in an estimated 30 to 40% of patients not receiving treatments of proven effectiveness and 20 – 25% of patients receiving care that is not needed or potentially harmful” (p. 899). Pronovost (2011) argued many improvement initiatives fail for adaptive rather than technical reasons. Hence, consistently addressing adaptive and implementation challenges through socio-adaptive approaches; referred to as the conceptual, social, and practical skills should allow professionals

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working in LTC to adapt and function in their environment (Mazon et al., 2019). These approaches can also assist organizations and their leaders when generating solutions to the barriers of infection prevention implementation.

To conclude this section, the literature suggests a need for concrete practice recommendations, implementation plans, and adaptation for LTC organizations to successfully integrate best practices into the work environment. In the next chapter, I discuss the theoretical foundations that inform the learning on the embedding process. These theoretical frameworks will lead to the examination, in Chapter Three, of the suggested critical factors that enable effective implementation into the LTC home workplace.

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## Chapter Two: Theoretical Foundations

Three theories or approaches are examined in this chapter. The theories or approaches help to identify a compelling schema that frames why, during infectious events, only a proportion of LTC homes were effective in implementing infection prevention guidelines. Furthermore, in my review of foundational theories, I focused on identifying a theory or framework that could assist in understanding the nature of the learning transaction, accounting for the unique internal service philosophy of a LTC home business model, accounting for the impact of government interventions in the setting of LTC infection prevention standards, and finally, understanding behavioural change at the front-line worker level. The discussion that follows describes my analysis of the metatheory Organizational Learning Theory, Normalization Process Theory as a mid-range theory, and implementation science as an approach identified to best account for the change management mechanisms and factors required to integrate best practices consistently and effectively within the workflows of frontline staff in LTC homes.

### Organizational Learning Theory

As a meta-theory, Organizational Learning Theory (OLT) appeared as a compelling overarching theory with characteristics that begin to describe the intent of my research – knowing how optimized effective behaviours or best practices are manifested at the front-line worker level of a LTC home. Specifically, OLT addresses constructs or mechanisms of interest in creating team behaviours such as perspectives on knowledge acquisition, information distribution, information interpretation, and organizational memory (Huber, 1991). Other concepts or mechanisms of interest captured by the theory were insights into congenital learning, experiential learning, vicarious learning, grafting, cognitive maps, and perceptual frameworks

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(Huber, 1991). This group of concepts or mechanisms are essentially the beginnings of the elements of a cogent change management approach.

Certain notable features in Organizational Learning Theory lend themselves to further discussion on the integration of behaviours. One observed feature is that of learning from direct experience. Through direct experience, the individual creates an interpretation of an experience and classifies the outcomes as successful or unsuccessful (Huber, 1991). From this classification experience, a successful outcome has a greater likelihood of developing into a routine (Huber, 1991). A second feature, OLT was observed to account for organizational memory. Organizational memory is generated from recounting an experience in written procedures, standards of practice, and shared perceptions (Levitt & March, 1988). This is followed by a third feature whereby organizations learn from the transfer of experience through communities of practice, technology, and shared procedures (Levitt & March, 1988).

As a theoretical framework, OLT appeared to be a helpful broad adjunct for the implementation of LTC infection prevention protocols into the behaviours of front-line workers. This occurs through learning from the experience of others, by the transmission of procedures and technologies from another organization, or from the transition of information from an evidence-based producing body. From my perspective, organizational learning theory as a theoretical foundation facilitates an understanding of how routines and practices are communicated through educational platforms, or subject matter experts, that assist in providing momentum to the process of the adoption of evidence-based practice guidelines by front-line workers. Next, I will discuss how Normalization Process Theory is complementary to OLT by taking the discussion closer to the level of practical application.

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### Normalization Process Theory

As a mid-range theory, Normalization Process Theory (NPT) appeared to complement OLT and provided a clearer systematic perspective when examining LTC home practice initiatives. Specifically, NPT addresses the social organization of the work (implementation), making improved practice initiatives routine elements of everyday life (embedding), and finally, sustaining embedded practices in their social contexts (integration) (May & Finch, 2009). Further, NPT examined the concept of material practice, or the activities people execute to meet specific goals (May & Finch, 2009). May and Finch (2009) observed that material practices are consciously and purposefully produced, reproduced, and transformed within an institutional or an organizational framework. The authors suggested this work takes place in interaction chains, or socially patterned points in time and space, which are connected by the flow of social processes. Normalization is also described by May and Finch (2009) as the work that actors perform as they engage in a collection of activities and by the means activities become routinely embedded in pre-existing, socially patterned, knowledge and practices.

NPT proposes that the work of implementation is operationalized through four generative mechanisms: coherence, cognitive participation, collective action, and reflexive monitoring (May & Finch, 2009). To summarize May and Finch (2009), the mechanism of coherence described that a practice (a collection of beliefs, behaviours, and specific acts that manipulate or organize objects and others) is made possible by a set of ideas about a practice's meaning, use, and utility, as well as by socially defined competencies. These meanings and competencies give structure to the practice. As per May and Finch (2009), cognitive participation framed a practice through collective action and through what are known as long interaction chains. Long interaction chains can involve highly focused work (as in enacting a routine laboratory experiment, for example),

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or more diffuse patterns of activity (as in operationalizing of a policy decision in a large organization). Through the concept of cognitive participation, workers need to be organized to participate in a new practice and need to ‘buy-in’ to the new practice in alignment with beliefs and other existing practices (May & Finch, 2009). This ‘buy-in’ or ‘legitimation’ leads to the concept of collective action. As a mechanism, collective action is observed as a purposeful investment of group effort or a goal-oriented practice (May & Finch, 2009). According to May and Finch (2009), the work of enacting a practice is prevalent in the encounters between organizational actors and the subsequent conditions that organize these actors. Finally, reflexive monitoring is described by the authors as patterns of reflection on collective actions and collective action outcomes (May & Finch, 2009). These collective actions and outcomes are continuously evaluated, both formally and informally, by participants in the implementation process (May & Finch, 2009).

According to NPT, the term systematization is used as a central concept to the implementation process and refers to the methodological formality of judgements and the rationalities that underpin the judgements (May & Finch, 2009). Regular and organized procedures for monitoring, the ongoing assessment of a process, and the impact of a new practice within an organizational context, may involve highly structured and formal mechanisms of institutional knowledge production, interpretation, as well as patterns of communal appraisal (May & Finch, 2009). The authors observed that both communal and individual appraisal may lead to attempts at reconfiguration in which ideas about the use and utility of practice are subverted, modified, or reconstructed. Further, NPT acknowledges that predictions about outcomes are complicated by multiple confounders that include the number of actors in a process, the effects of confounding variables, and the impact of chance in a social system that is

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under observation (May & Finch, 2009). Effectively, the authors suggest that social processes transform systematically as they are produced, observed, and reproduced.

May and Finch (2009) discern that although implementation processes are complex and emergent, they are rarely arbitrary. The authors provided insight that, in practice, emergence is often characterized by conforming to a relatively narrow range of possibilities that are held in place by normative frameworks (shared beliefs about action, rules about appropriate forms of behaviour, and so forth) and structural constraints (the permissive actions of others, the availability of social spaces for action, material resources, and symbolic resources). Thus, normative and structural constraints have a powerful effect on implementation processes at work and reflect actors' propensities to work within already normalized frames of knowledge and practice (May & Finch, 2009).

In conclusion, NPT is rich in concepts and frameworks that can be applied to practice improvements in LTC homes. As a theory, NPT creates a theoretical structure that leads to the establishment of a process or a template of activities to be considered for best practice integration. This process or template of core activities aligns optimally with the intentions of my research.

In reflection of the above two sections, a key takeaway from both OLT and NPT is that the uptake of best practices into work routines is not a random occurrence but requires intent. As identified in NPT, mechanisms such as coherence, cognitive participation, collective action, and reflexive monitoring as well as the concept of systemization, provide insight into how to operationalize intent. The following discussion of implementation science brings the concepts described in OLT and NPT to a further level of precision, whereby the intent of a localized or

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facility-based change management initiative, as a conscious, focused process, can be better developed and planned.

### **Implementation Science as an Approach**

Implementation science builds on both OLT and NPT from a healthcare sector perspective. Implementation science offers a granular approach that systematically incorporates a change management perspective to the localized challenges of behaviour adaptation and task integration. The use of a change management perspective (process mapping, guided learning, and project management) may be particularly promising for LTC homes practice research, especially as it relates to the improved fidelity of the integration of infection prevention practices and best practice protocols that are required to treat or create a sustained safe environment for a cohort of vulnerable residents.

#### ***What is implementation science?***

As a prelude to addressing this question, the Institute of Health Care Improvement (2004) asserts that “sound science exists on the basis of which costs and outcomes of current health care practices can be greatly improved, but much of the science lies fallow and unused in daily work. In other words, there is a gap between what we know and what we do” (p. 97). Implementation science is an approach that endeavours to close the gap between *what we know* versus *what we do* from a front-line and daily work perspective. As a concept, implementation science does not seek to contribute generalizable knowledge; rather, it targets providers, clinics, facilities, and organizations (Bauer & Kirchner, 2020). Bauer and Kirchner (2020) characterized implementation science as a relationship between operational partners and clinical innovators, with operational partners being the experts of their structure and of the operating context. Further, implementation science is the synthesis process that brings the knowledge of structure,

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context, and innovation into daily practice. Therefore, adopting an implementation science approach within LTC homes initiatives offers a mindset to pragmatically enable front-line worker behaviour change.

### ***Implementation Science and Infection Prevention***

How does implementation science align with infection prevention in the literature? Dekker et al. (2020) wrote a “Geneva Think Tank concluded that implementation science must be a priority in infection prevention” (p. 17). The Geneva Think Tank findings stressed “the importance for infection prevention experts, as well as other health care workers, to improve their implementation skills” (Dekker et al., 2020, p. 17). Implementation science mechanisms in infection prevention were further described in the work of Saint et al. (2010). According to Saint et al. (2010) “the decision to adopt and implement infection prevention practice is influenced by practice characteristics (e.g., cost, evidence, and usability), the characteristics of the organization (e.g., leadership, personnel, and resources) and the environmental context (e.g., public reporting and pay for performance)” (p. S15). Saint et al. viewed the decision to adopt was distinct from the decision to implement. Saint et al. (2010) theorized that “only by effectively implementing evidence-based infection prevention practices can we reduce the incidence of health care associated infection” (p. S16).

Clack et al. (2018) generated implementation science observations regarding advancing infection practices across European hospitals. Implementation science insights included: developing implementation agendas that are context-driven, shaping participants’ perception of success, and the ability of the institution to generate focus on the program (such as through a dedicated nurse). Other observations associated with implementation science approaches included personal commitment and the continuous presence of influential boundary-spanning

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individuals, a need for information on the context within which implementation took place, the outcome of the change initiative observed as a function of a shared commitment to the change among organizational members, and finally, observing the confidence among team members in the collective ability to implement change (Clack et al., 2018). Hence, based on Dekker et al. (2021), Saint et al. (2010), and Clack et al. (2018), using an implementation science approach is a persuasive opportunity to drive behaviour change. Additional observations on implementation science are included in Appendix E.

### Now What?

The literature on OLT, NPT, and implementation science, as described above, provided powerful considerations for the planned introduction of best practice protocols within a clinical or front-line setting. A key message expressed throughout this section is the need for attention to pragmatic planning, execution, reflection, and adaptation within an evolving and dynamic practice context. Further, a focus on an implementation science approach could create systemic benefits by enabling tests of improvement, evaluation, and adaptation in the broad LTC home industry. Thus, learning through action within a guided, incremental, evidence-based approach may be a potential enabler for improved and sustained infection control outcomes in the LTC sector.

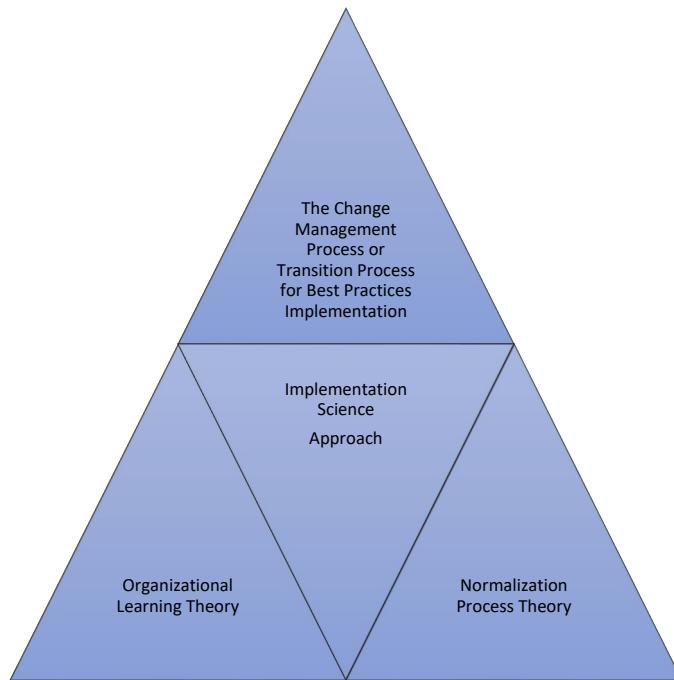
To conclude this chapter on theoretical foundations and approaches, organizational learning theory and normalization processes theory appear to align quite favourably with the implementation science approach as a change management mindset. Synthesizing the insights of OLT and NPT, implementation science can be thought of as an enabler of local experiences, as, according to Berwick (2008), often there is a bias placed on local wisdom that “can sacrifice local wisdom” (p. 1184). As Berwick states, “a better plan is to equip the workforce to study the

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effects of their efforts actively and objectively as part of their daily work" (p. 1184). Berwick's statement summarizes the attraction of mechanisms such as implementation science and as a pragmatic change management initiative framework that guided my research at the local level.

Conceptually, and for the purpose of this research study, organizational learning theory, normalization process theory, and implementation science approaches build to a convergence that can be identified as a change management framework or a transition process for LTC home best practice implementation into front-line workers. Figure 1 depicts this integrated dynamic.

***Figure 1: Theoretical Foundations and Managing Change***



*Note.* This figure presents a conceptual model of Organizational Learning Theory and Normalization Process Theory, which serve as foundational theories for the Implementation Science Approach.

Implementation Science is then demonstrated as a baseline approach for the Change Management Process or Transition Process needed to guide best practice implementation for infection prevention initiatives.

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According to Brydges and Brydges (2016) a key state within the practice convergence process is a transitional or change management phase called the ‘Neutral Zone’ (p. 5). It is in the neutral zone that “critical psychological realignment and repatterning takes place” (p. 5). In the neutral zone, the outlook, attitude, values, self-image, and thinking that were functional in the past need to be undone, then reoriented, and redefined for new tasks, activities, and processes.

My research takes this convergence of transition and behaviour alignment and suggests that implementation factors, researched from the literature and from interview participants, are paramount as transitional considerations for infection prevention best practice uptake at the local level of a setting such as a LTC home. Drawing from NPT and implementation science approaches, eleven critical implementation factors are synthesized from the literature and suggest a systematic pathway for both the navigation of the neutral zone as well as offering a change management framework or structure to guide my research.

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## Chapter Three: Literature Review

### Overview

As identified in the introduction to this dissertation, my primary research interest is to understand how certain long-term care homes were successful in embedding best practices in infection prevention for airborne infections into the practices of their frontline staff. This research interest is anchored in my research question: **How are evidence-informed infection prevention best practices for transmissible airborne diseases prospectively implemented by leadership into frontline LTC home workers' practices?** A utopian outcome of this research would be to gain insights into the optimal process (e.g. task, activities, step-by-step plan etc.) that enables leadership to influence a LTC home worker to implement best practices in infection prevention on a consistent, individualized basis.

NPT, as a theoretical foundation and implementation science as an approach, is identified as a method for managing change and provides a framework to systematically address the experience of consistency in implementation and uptake of best practices in the healthcare realm. Although implementation science addresses concepts such as evaluation, research, assessment, facilitation, intervention selection, and evidence-based knowledge tools that drive practice, I am focused on understanding the critical factors important to implementation. I believe attention to these critical factors assists with the planning approach used to drive the uptake of evidence-based infection prevention guidelines. Hence, my literature review serves as an examination of critical factors or enablers for mediating, executing, and managing the change initiative. Through my research, I became eager to learn if other factors emerge as critical for implementation success or if the factors that I have selected from the literature have any real impact.

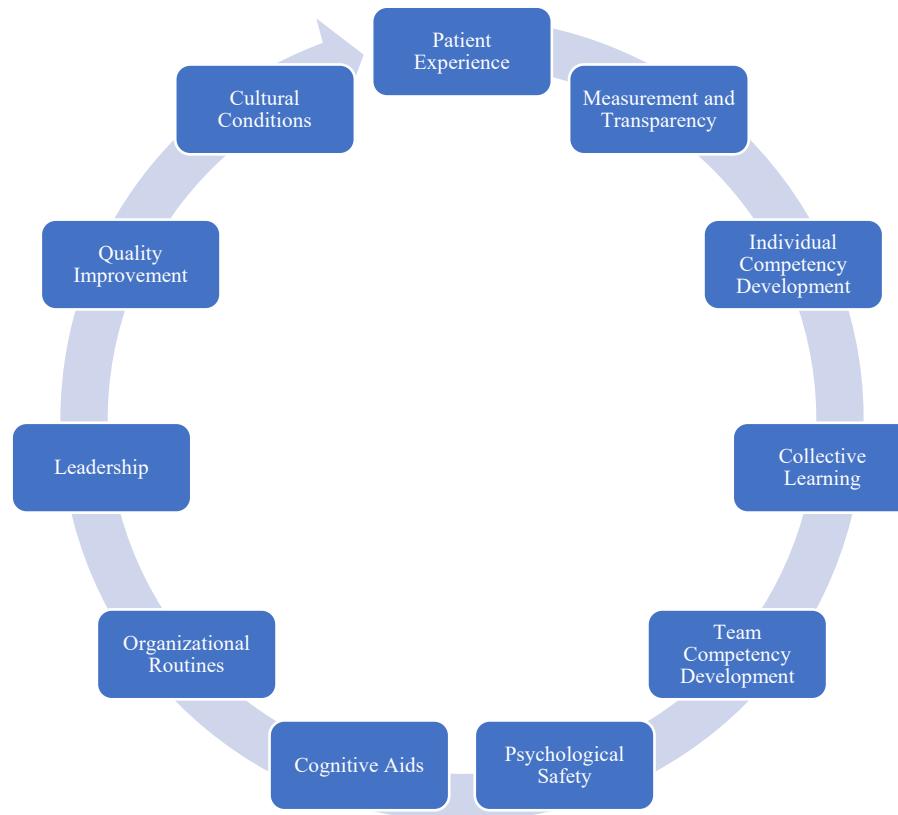
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This chapter begins with my approach to the literature review to give the reader a sense of the research process undertaken. Then, I briefly explore applicable literature on handwashing and occupational health to help set the stage for infection prevention initiatives. I then examine selected literature on the barriers to infection prevention and, using the implementation science approaches as a foundational backdrop, I examine eleven critical factors for best practice implementation.

The critical factors are presented linearly and cyclically, beginning with the patient experience and ending with cultural factors (Figure 2). This is a deliberate choice.

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**Figure 2: A Linear Perspective of the Factors Important for Implementation**



Each factor builds on the other and needs to be repeated due to the changing dynamic within the healthcare environment. In my experience with change management, and as echoed by Bridges and Bridges (2016), this sequence has had a profound effect in creating a developmental pathway for successful and sustainable transitions. However, I postulate that the target factors align with normative dimensions (e.g., structural, interpersonal, and process dimensions) that encapsulate the critical implementation factors. It was anticipated that my research may uncover other factors within the normative dimensions that differ from those presented in the literature.

Further, the critical factors identified in Figure 2 are considered important elements to both the implementation and the evaluation of a change initiative. I propose that an implementation initiative be evaluated systematically through the critical factors when dealing

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with a complex system such as the healthcare system. Finally, the target factors or critical factors also help generate evidence and act as a framework for an individual to drive their practice evolution.

### **Approach to the Literature Review**

Implementation science is about the synthesis of new knowledge into practice. The catalyst stimulating this literature review arose with an article written for the Institute for Healthcare Improvement by Frankel et al. (2017) on change management aspects for best practice implementation. Frankel et al. (2017) proposed a framework for safe, reliable, and effective care important in the development of a quality healthcare system. The article highlighted an elegant cultural domain and a learning system domain that generated interconnected components critical to organizational success and the improvement of the practice context. The Frankel et al. (2017) framework identified components such as leadership, improvement, and measurement, as well as teamwork, communication and other elements as being integral to quality improvement.

With the Frankel et al. (2017) framework as an initial influence, I began to distill the phenomenon of my study (implementation practices for infection prevention in LTC homes) and began to sketch a preliminary conceptual model to help guide an explanation of the phenomenon. I then extensively examined the work from Sreeramoju (2019) and Dixon-Woods et al. (2011) to gain further depth on implementation and infection prevention practices. Foundational to my literature review efforts, the work of Sreeramoju (2019) led me to research concepts related to the socioadaptive mechanisms for best practice implementation, while Dixon-Woods et al. (2011) inspired me to examine team learning approaches as factors that influence the effectiveness of infection prevention initiatives.

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I relied significantly on Google Scholar as my primary search tool and began to refine my research efforts to LTC homes and congregate settings. I found examples of articles that were significant to the medical field, albeit many scholarly articles focused on acute care settings rather than LTC settings or post-acute settings. Although my initial search was of limited scope, this early exploration of the literature gave me increased comfort with the extant literature. Building from this experience, I continued using Google Scholar and systematically began to search the literature using key search terms with a time frame of post-2003.

To explain, in the context of infection prevention-related literature, the year 2003 is a significant date in the Ontario Health Care System, as it marked the end of the SARS outbreak in the Toronto, Ontario region, providing a logical milestone to further focus the temporal aspect of my literature search. Hence, I predominantly examined articles that were written in the post-2003 period to the present.

It is also important to note that I initially decided to prioritize articles that emerged from socialized healthcare systems like Canada's. I paid special attention to articles from South Korea, Australia, New Zealand, Japan, Germany, the United Kingdom, and Scandinavian Countries, all of which offered additional knowledge and learning opportunities that were ultimately consistent with what had emerged from North American studies.

In terms of process, several keywords were used individually or in combination as core search elements for my research study. The baseline keywords for my search were originally socioadaptive, long-term care, nursing homes and team learning. Other keywords included hand hygiene, handwashing, implementation, implementation science, patient stories, patient experience, nurse liaison, measurement, transparency, competency/skills development, collective learning, team-based learning, cognitive aids, psychological safety, SCARF, organizational

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culture, role development, institutional logic, routines, embedding, habits, patient safety, leadership, and quality improvement. Google Scholar was configured to direct me to the Athabasca University Library research tool, and I began a systematic examination of articles within the search environment. I expanded my search through the examination of the library databases (Biomed Central, PubMed Central, ProQuest Business Database, Health Science Nursing/Academic Edition) using the above keywords in the title, subject heading, abstracts, and all text fields. Further, I examined linked or related articles and examined articles cited within the major papers that were part of my original search. As expected, this research returned me to articles written prior to 2003. Noting a paucity of articles dealing directly with the implementation of infection prevention practices in LTC homes, I further examined the databases of ABI/Inform Global, Business Source Complete, Medline, Academic Search Complete, CINAHL, and Science Direct. I consistently considered scholarly articles in my search.

In conclusion, the selection of keywords, the use of Google Scholar, the examination of the above databases, the examination of references in key articles, prioritizing a timeline of post-2003, and then articles written before 2003, provided the backdrop for the literature referenced in this dissertation.

### **Barriers to Infection Prevention Implementation**

This literature review is primarily focused on researching the factors enabling best practices integration into front-line staff; however, it is important to begin with an examination of the salient barriers to infection prevention implementation. As with any implementation, initiative, project, or operation, a risk assessment and subsequent risk mitigation plan is necessary as a part of a due diligence process. By examining the barriers to implementation

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within an operating context, I would suggest that as contingencies are contemplated, strategic opportunities are created that may ultimately uncover other enablers to best practice integration. Therefore, the following literature offers several insights into the barriers to the uptake of infection control best practices.

First, several insights from the literature appeared related to ‘structural’ factors. Barker et al. (2017) and Mody et al. (2005), in their respective work, both described issues with a barrier related to high staff turnover and the subsequent impact of the additional time spent training new staff. In addition, according to Barker et al. (2017), heavy clinical workload has a detrimental impact on best practice uptake while, interestingly, Mody et al. (2005) observed that infection control responsibilities were carried out by part-time workers. Travers et al. (2015) work aligned with Barker and Mody in finding that language, cultural issues, workload, and reliance on part-time staff contributed as structural barriers to infection control effectiveness. Further, Chipfawa et al. (2014) found, from a structural perspective, that infection control workshops were poorly organized and that a lack of time and resources led to a lack of knowledge. This complemented Travers et al. (2015) findings related to deficits in knowledge training as well as effective mechanisms for accountability. Finally, Mody et al. (2015) identified a barrier from a physical setting perspective given that residents in LTC homes cannot easily be placed into isolation due to the characteristics of their cognitive status.

Second, the literature also described several ‘interpersonal’ factors as barriers to infection control practice uptake. Zinastra et al. (2018) describe how low levels of motivation, feelings of powerlessness, negative attitude, and poor health support were observed as barriers. A lack of formal feedback mechanisms on performance, the impact of staff hierarchy, and staff witnessing poor implementation from coworkers were additional insightful barriers observed in Herbec’s

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(2020) work. Garber et al. (2008) wrote of a lack of self-efficacy from a lack of confidence in adequately performing infection control guidelines. Clearly, interpersonal factors warrant a leader's and an organization's focused attention in an implementation initiative.

Zinastra et al. (2018) and Lee et al. (2018) described issues with the 'mechanism' or 'processes' behind competency development. Zinastra et al. (2018) observed generalized poor training and a conflict in training with policy guidelines. Lee et al. (2018) observed issues with the professional approach for training healthcare workers. Lee et al. (2018) described individuals not learning why a practice was necessary, observations regarding varying educational levels, and a noted lack of leadership in communicating the desired culture. Lee et al. (2018) also observed unclear role boundaries, low interdisciplinary collaboration, and an absence of surveillance initiatives as procedural mechanisms that impede skill development in teams. Table 1 illustrates the barriers to implementation within the normative dimensions introduced above.

**Table 2:**

*Barriers to Implementation*

<b>Structural Factors</b>	<b>Interpersonal Factors</b>	<b>Mechanisms or Process Factors</b>
Staff turnover	Motivation	Policy
Heavy clinical workload	Lack of feedback	Non-professional approach
Part-time workers	Coworker implementation	Not understanding why
Poor organization	Lack of confidence	Communication
Lack of time and resources		Role boundaries
Accountability mechanisms		Absent surveillance
Physical structure		

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*Note.* Structural Factors cited from Barker et al. (2017), Mody et al. (2005), Travers et al. (2015) & Chipfawa et al. (2014); Interpersonal Factors cited from Zinstra et al. (2018), Garber et al. (2008) & Herbec (2020) and; Process Factors cited from Zinstra et al. (2018) & Lee et al. (2018)

In summary, the above literature described structural, interpersonal, and procedural mechanisms as potential categorical barriers that appear important and act as due diligence considerations of impediments to best practice uptake. Therefore, these barriers need to be considered pragmatically when planning and initiating a change in practice behaviour. Furthermore, theoretically, the essence of these barriers can be drawn from the insights of Organizational Learning Theory, Normalization Process Theory, and especially Implementation Science. For instance, implementation science initiatives can consider these barriers and generate contingency action. Therefore, a conscious awareness of the manifestation of structural, interpersonal, and process barriers in implementation initiatives is critical to success. Hence, as a normative framework, structural, interpersonal, and procedural-driven barriers can become opportunities to identify enabling factors that mitigate the impact of these implementation headwinds.

### **Hand Hygiene and Occupational Health**

Examining research on handwashing is a good place to start, as handwashing can be an overarching lens into the topic of infection control. As children, we were taught and reminded of the importance of handwashing. For many of us, it is a routine or habit that takes place without thought. Moving forward, throughout my healthcare career, the importance and significance of handwashing and hand hygiene had been emphasized in the workplace. Specifically, the emphasis on hand hygiene aimed to inhibit the growth and spread of microorganisms on the worker's hand, especially before touching a patient or a patient-contacted surface (Hammerschmidt & Manser, 2019). However, compliance with thorough handwashing and hand

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hygiene continues to be a challenge. Therefore, a brief examination of the selected literature on handwashing and hand hygiene provides an important consideration for my research work. The following selected works of research on handwashing and hand hygiene provide insights into the challenges and opportunities of developing and delivering the important elements of overarching infection prevention initiatives and provide insights that can be applied to infection prevention initiatives from airborne pathogens.

As a proxy of the effectiveness of handwashing, in a systemic review, Tacconeelli and Pezzani (2019) quantified the public health burden of antimicrobial resistance infection in the European Union. The authors estimated 63.5% of antibiotic-resistant bacteria infections in 2015 were associated with health care interventions as were an observed 6.44 deaths per 100,000 population. According to Tacconeelli and Pezzani (2019), estimates of disability from antibiotic-resistant infection were highest in infants and elderly people. As identified by the authors, attention to effective hand hygiene and handwashing execution is an ongoing challenge.

Hammerschmidt and Manser (2019) found most nurses in nursing home settings knew effective hand hygiene procedures, with infection prevention standards and equipment generally available to the workforce. However, Hammerschmidt and Manser (2019) discerned practice compliance depended on the proximity of the standards, the equipment in the immediate work area, as well as the effect of positive role modelling. Hammerschmidt and Manser's (2019) work offered strategies to facilitate improved hand hygiene through the availability of hand disinfectant materials in the immediate work area, along with strategies to create a greater awareness of the impact of the role model function of nursing staff. Table 2 illustrates the handwashing and hand hygiene challenges.

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**Table 3:**

### *Handwashing/Hand Hygiene Challenges*

<b>Practice Compliance Challenges</b>	<b>Environment Challenges</b>
Proximity of standards	Handwashing locations
Equipment in the immediate area	Low staffing
Appropriate role model	Limited supervision
Awareness	Limited peer support
	Staff attitudes

*Note:* Practice Compliance Challenges cited from Hammerschmidt & Manser (2019) Environmental Challenges cited from Hattula and Stevens (1997), Castle et al. (2012), & Thompson et al. (2015).

Hattula and Stevens' (1997) descriptive study of the handwashing environment found that nursing home environments are not planned to accommodate the infection control needs for efficacious hand hygiene (e.g. inadequate sink location and paper towel dispenser positions). Castle et al. (2012), in their exploratory analysis of a sample of nursing homes receiving deficiency citations for hand hygiene, speculated the impact of low staffing, limited supervision, high turnover, limited peer support, and staff attitude as factors contributing to the citation deficiencies. The above authors' deductions are echoed by the documented findings of Thompson et al. (2015) respecting similar environmental factors associated with inadequate handwashing and protective glove utilization in healthcare settings.

In contrast, the literature on handwashing provided several potential practices and technical solutions to the barriers to effective infection prevention. Takahashi and Turale's (2009) work concluded that a willingness to consciously practice standard precautions, attention to the actual handwashing environment, and staff attendance at infection prevention seminars

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were identified as factors promoting handwashing compliance by staff. The need to target worker attitudes and the opportunity to identify and train one person responsible for ongoing evaluation and teaching of infection prevention techniques was identified by Takahashi and Turale (2009) as a solution to handwashing and hand hygiene compliance. Voss and Widmer (2015) suggested technical opportunities such as the recommended use of alcohol-based hand sanitization solutions due to these solutions' rapid activity, superior efficiency, and minimal time commitment for staff, as opportunities for LTC home infection prevention efforts.

Further, Huang and Wu's (2008) work exemplified the cognitive efforts of improved infection prevention initiatives. In examining handwashing improvements, interventions were incorporated to educate staff, motivate, give feedback, engineer controls, and adjust the placement of visual reminders. Didactic sessions which highlighted the purpose of the handwashing intervention, the importance of handwashing, handwashing protocols, timing, and a written manual of hand hygiene interventions were introduced (Huang & Wu, 2008). Interestingly, hands-on training immediately after the lecture, thirty-minute reviews during the worker's shifts, continued practice, and feedback were important enablers for effective hand hygiene initiatives (Huang & Wu, 2008). Table 3 illustrates handwashing and hand hygiene enablers.

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**Table 4:**

### *Handwashing/Hand Hygiene Enablers*

<b>Important Enablers of Hand Hygiene</b>
Conscious willingness to practice precautions
Staff engagement
Use of didactic sessions
Training a lead individual
Technical solutions (e.g., Alcohol Gels)
<u>Cognitive enhancements (Training then immediate practice)</u>

*Note.* Hand Hygiene enablers cited from Takahashi & Turale (2009), Voss & Widmer (2015), and Huang & Wu (2008)

Reflecting on the above, the extant literature on handwashing can be helpful and instrumental in providing baseline guidance to infection prevention initiatives that impact on an individual's practice. An emphasis on identifying implementation barriers, developing practice and technical solutions, as well as creating cognitive solutions offer a pathway for enhanced infection prevention initiatives in multiple environments and healthcare settings. However, I believe the literature falls short of an adequate solution to addressing airborne pathogens circulating in LTC homes as the handwashing literature essentially addresses surface contamination and the subsequent spread of contaminants through hand-to-hand and hand-to-surface contact. Given the immediate and potentially fatal impact of respiratory pathogens, the pathogen's effectiveness in entering the human body as an airborne suspension, and the pathogen's impact on the body's physiology as it spreads through the cardiopulmonary system, an evolving mindset and increasingly agile implementation approach is required to counter this insidious health threat.

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Finally, when examining the seriousness of a health threat to residents and staff members as well as the requirement for an agile mindset to address the threat, attention to occupational health and safety practices provides an intuitive linkage to implementation opportunities as it relates to infection prevention initiatives. Occupational health and safety programs instruct staff and management stakeholders to systematically examine a workplace hazard through the lens of factors contributing to an employment health and safety risk for individual workers. According to the Occupational Safety Group Inc. (2023), the factors for consideration are grouped into five categories: people, equipment, material, environmental and process. For example, people factors include worker attitude, lack of worker knowledge, rushing, or fatigue (Occupational Safety Group Inc., 2023). Process factors can include work design, workflow, as well as policies and procedures that guide work activity (Occupational Safety Group Inc., 2023). Hence, the insights from the handwashing literature together with the above occupational health and safety practice guidance both link to a systematic mindset for an organization or a leader to examine, especially when observing a potential variance from expected or within the development of an initiative to protect an individual worker. Therefore, the same systematic mindset is suggested as a principle and a precursor to preparing and training workers when developing and implementing infection prevention mitigations for airborne pathogens in LTC homes. Hence, implementation science, as a change management vehicle, is well-suited to identifying factors that can mitigate infection by enabling individual workers' practice. Table 4 illustrates sources of practice variation.

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**Table 5:**

*Sources of Practice Variation or Risk*

<b>Variation Sources</b>
People Factors
Equipment Factors
Material Factors
Environmental Factors
Process Factors

*Note.* Source Occupational Safety Group Inc. (2023)

In conclusion, structural, interpersonal, and process considerations conceptually frame a series of critical factors important for the implementation of best practices (Table 5).

**Table 6:**

*Normative Change Management Dimensions*

<b>Interpersonal Normative Dimension</b>	<b>Structural Normative Dimension</b>	<b>Procedural Normative Dimension</b>
Characterized as social and relationship-orientated traits	Characterized as formation, functional, and architectural traits	Characterized as process-driven, action basis, and stepwise

Critical Implementation Factors

*Note.* The table describes the three normative dimensions of interpersonal, structural, and procedural dimensions. The critical implementation factors for managing change are observed to be antecedents to the normative dimensions.

Consistent with implementation science and using the observations from the handwashing literature and occupational health processes, an identification of target factors that

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facilitate the synthesis of new knowledge into practice provides a blueprint of considerations for an initiative. In the following pages, an examination of eleven target or critical implementation factors is undertaken. An understanding of each of these factors, and their alignment with the above normative dimensions, assists with the adaptation and sustainability of new behaviours into the front-line worker's practice.

### **Critical Factors for Best Practice Implementation**

#### ***Examining The Patient Experience as a Critical Factor for Best Practice Implementation***

A primary focus of this research initiative is the attention to the experience of the patient within the health care system and/or while the patient is receiving health care interventions from front-line staff. To this end, it is common in the Ontario Health Care System to engage a patient and/or family to assist with an experience-based design or co-design of a program. For example, at a local hospital building project, individuals with disabilities are invited into a simulated or mock display of a patient room to help determine compliance with individual disability requirements and other structural improvements. The experience of these invited individuals is examined and analyzed for potential design change.

Patient experience is of interest in this dissertation as the resident is exposed to the behaviour and interventions of staff during an infectious event. In other words, there is a direct relationship between the resident and the healthcare worker. At a granular level, what is the patient or resident experience? Wolf et al. (2014) described patient experience as a focus on individualized care services, tailored to the patient's needs, and through which a patient is engaged as a key partner in their care.

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Patient experience, as a practice concept, is also tied to the patient's expectations and whether these expectations were realized. Wolf et al. (2014) referenced the Berg Institute's definition of patient experience as "the sum of all interactions, shaped by an organizational culture, that influences patient perception across the continuum of care" (p. 16). For this research initiative, resident experience can be considered as the personal participation in all conscious and unconscious interventions and behaviours that impact the resident's exposure and satisfaction with the health care system and its stakeholders.

It is important to note that resident dignity and respect are important perspectives generated through attention to resident experience. In a hospital study examining patient dignity, Walsh and Kowanko (2020) found that residents attributed characteristics such as being physically exposed, being personally rushed, having time to decide, being seen as a person, personal consideration, and discretion as important experience traits. Johnston et al. (2017), through a Dignity Care Intervention, found an increased effort to create a culture of involvement, listening, and feedback became a catalyst for improving service and increasing satisfaction among a cohort of community-based palliative care patients. In a Manitoba nursing home study, Pan et al. (2016) found residents were more likely to disclose a concern through open communication in a respectful, empathetic, and trustful environment. Using the patient dignity question "What do I need to know about you as a person to give you the best possible care?" the range of responses positively influenced health service providers in their attitude, care delivery, respect, empathy, and satisfaction as well as gave residents a heightened sense of dignity (Pan et al., 2016, p. 1). Finally, in a need to examine dignity, privacy, and respect issues for patients in a Mental Health Trust in the United Kingdom, Chadwick (2012) found an increased partnership approach with patients when collaboratively addressing the patients' care issues. However,

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Chadwick (2012) found competing priorities and low internal energy for individual staff, often due to interpersonal conflict. This factor created active resistance to this patient experience initiative. Therefore, as observed above, attention to resident dignity and respect, through a focus on the resident experience, has the potential to increase resident satisfaction and positively impact the care process. However, continuous encouragement, dedicated efforts, and persistence are required as the efforts related to establishing dignity and respect are not easy.

### **Why is examining the patient experience important?**

The literature suggests that healthcare workers' attention to patient experience is influential to practice behaviour. As Flynn et al. (2021) observed, the impact of sharing patient and family feedback provided participants with a connection to the patient, an understanding of their experience, reminded them of why the intervention was important, and motivated participants to sustain work outcomes. Backman et al. (2021) took Flynn et al. (2021) observation further by discovering that a troubled conscience occurred when healthcare staff perceived the inability to provide care as per patient needs. To mitigate this emotional perception, Backman et al. (2021) found managers may promote patient-centred care efforts by encouraging thinking with a different mindset, discussing, and encouraging new ideas, and modifying responsibilities to meet patient needs. Backman et al. (2021) study suggested those who deploy the above tactics could improve the person-centredness of care, mitigate the workforce risks, and the negative consequences of healthcare staff's stress of consciousness.

Like Backman et al. (2021), Rapport et al. (2018) suggested that patients receive substandard and variable care that is frequently inappropriate and unsafe. As a result, healthcare stakeholders needed to include the user perspective to inform the healthcare professional's opinion and to create patient-centred outcome indicators that more thoroughly evaluate an

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initiative. To this end, an initiative should be closely aligned with the resident's needs and expectations, and the initiative should be designed to mitigate the challenges of a shared understanding between stakeholders.

In brief, Flynn et al. (2021), Backman et al. (2021), and Rapport et al. (2018) suggested that a focus on the patient's experience has an impact on the awareness, motivation, and sustained behaviours of staff as they plan and implement their care routines. It is my view that this social interaction is a critical insight for best practice implementation research.

### **In an attempt to advance best practices, how can attention to patient experience be enabled?**

First, a suggestion from the literature emerges that the benefit of attention to patient experience is taken to a new level through the approach of codesign. According to Ward et al. (2018), codesign involves an equal partnership of the participants working within the healthcare system. In Ward et al. (2018), participants, including patients, were selected for having had experience in using the system, as well as the system design, and through their participation contributed to achieving improved outcomes and efficiency. Ultimately, it was observed that in codesign approaches, collective interventions were created where each team member contributed to the working of the group in ways to create optimum use of skills and talent (Ward et al., 2018). Such work created greater awareness and appreciation of the intervention components, developed greater ownership, and developed greater engagement by the healthcare team (Ward et al., 2018).

Second, an issue affecting patient experience is the impact of the healthcare system's complexity. According to Rapport et al. (2021), the system is hard to manage because of the

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many parts, its complex sociotechnical system, deeply ingrained culture, and political arrangements. Rapport et al. (2021) made the case that stakeholders need to appreciate and balance the social and cultural aspects of healthcare settings with attention to the patient's needs. Hence, in Rapport et al.'s (2021) work, the development of collaborative team practices was facilitated by focusing on shared principles such as patient-centred care. Rapport et al. (2021) suggested that it is critically important to have patient involvement through the offering of real-world experiences, contribution to public governance, and oversight. Further, as a primary participant, the patient helped raise awareness of the effectiveness of implementation within a complex healthcare environment (Rapport et al., 2021).

Third, the literature also provided interesting evidence of the benefit of attention to patient experience on health care outcomes. Roberts et al. (2021) studied the introduction of *patient-reporting outcome measures* (PROMs) in a medical oncology outpatient department. Roberts et al. (2021) discerned that patient-reported outcome measures improved communications, which resulted in improved quality of life as well as survival benefits. Notably, facilitators (individuals who used education strategies to introduce patient-reported outcome measures to clinicians and staff, and how to interpret results) provided a particularly important role in the implementation process and the observed outcomes of the initiative through attention to elements such as the patient experience (Roberts et al., 2021). Roberts et al. (2021) work complemented Angelini et al. (2021), whose work examined the impact of person-centred pain management interventions on the resistance to change. Angelini et al. (2021) found that a healthcare organization can develop fatigue with continual change, which can create resistance to change as well as poor outcomes. According to Angelini et al. (2021), to overcome this change fatigue, person-centred care was an important approach with the patient as an equal partner as

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well as a stakeholder in healthcare behaviour. Angelini et al. (2021) found that a culture of routine and structure increased when implementing person-centred care, while the authors also observed a lower resistance to change.

Fourth, Manalili and Santana (2021) work observed the collection and monitoring of patients' experiences through patient-reported experience measures (PREMs), a tool that is important in tracking changes in care quality, stimulating innovation, and enhancing person-centred care. Manalili and Santana (2021) found evidence to suggest an association between an improved patient experience and enhanced care practices. The findings included increased patient involvement in shared decision-making, improved communication, and improved coordination of patient care.

In summary, though not attributable to the LTC sector, Rapport et al. (2021), Roberts et al. (2021), Angelini et al. (2021) and Manalili and Santana (2021) all provided compelling perspectives and evidence of how the systematic awareness of a patient's experience can have a positive impact on patient care routines, implementation, and care practice outcomes. Whether it be through improved communication, mitigating resistance to change, or improved monitoring, attention to resident experience appears to add value to healthcare interventions.

Reflecting on the key conclusions from this section, and the implications on research, the resident experience, and feedback from residents appear as an important baseline and a critical factor from which to launch an improvement or change management initiative related to infection prevention and protocol integration. From a social or relationship lens, the perspective of a resident should provide essential awareness and motivation of the need for practitioners to change an existing behaviour or routine.

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However, what is left unanswered is the impact of attention to resident and family experience in LTC homes and the relationship of this approach to infection prevention and protocol integration. This gap is relevant from my perspective, given that the interventions shaped by an organization's efforts related to its residents may influence the resident experience and outcomes. Conscious mindfulness of the resident's experience, while integrating best practices, presumably could have an impact on the fidelity of the best practice infection prevention process. Therefore, examining the impact of attention to resident experience, as a critical attribute or factor for the integration of infection prevention protocols in front-line workers, is important to investigate. Table 6 illustrates the key attributes of the Patient Experience Critical Factor.

**Table 7:**

*Key Attributes of the Patient Experience Critical Factor*

<b>Critical Factor</b>	<b>Key Attributes</b>
Patient Experience	<p>The patient was observed as a key partner in the design of care</p> <p>Patient expectations are recognized and realized in all interventions and practice behaviours</p> <p>Dignity and respect shown to the patient</p> <p>Motivates practitioners to change</p> <p>Has an impact on patient outcomes</p> <p>Increases the effectiveness of implementation in a complex environment</p>

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Unfortunately, in LTC homes, a resident or family may not be able to clearly articulate a need or an experience. Feedback may need to be generated from unobtrusive mechanisms to crystallize action. The next section provides insight into measurement and transparency as a critical implementation factor for the improvement in the uptake of LTC infection prevention guidelines.

### ***Measurement and Transparency as a Critical Factor of Best Practice Implementation***

Simply stated, we are often unaware of a problem until we begin to feel the symptoms of the problem. Hence, the discipline of measurement can provide an early, transparent indication of an emerging problem. For example, certain measures can provide a proxy for the ultimate success of a treatment outcome (e.g., normal blood pressure and heart rate measures following treatment of an acute stroke). Further, in long-term care settings, the signals of an infection outbreak or infectious event can emerge quickly, and then exponentially, with stakeholders unsure of when and how to react. A commitment to ongoing measurement can help forewarn of a change in the local environment.

As a process or activity, the discipline of measurement helps to ascertain the extent and the scale of an event as well as its progression or trend. Similarly, ongoing measurement can identify if mitigation strategies are working. As such, performance and outcome measurements are viewed in this research initiative as a key enabler or factor that facilitates the determination of a baseline state, the emergence of risk, and the need for new actions that ultimately save lives.

### **Why is measurement important?**

A measurement, and the transparency that emerges from measurement, provide an initial glimpse of contextual information that will drive the need for improved actions in an

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organization (or in a nursing unit). In my view, reflection on measurement can become a core motivating factor that assists in establishing for stakeholders the why or the urgency of a needed change. I suggest that the discipline of measurement may also improve the fidelity of the implementation of a best practice protocol, as an observer is provided with evidence and objective feedback on the success of the implemented action. Hence, measurement as a transparent feedback source is important as a driver for improvement and implementation.

### **Key Perspectives from the Literature on Measurement and Transparency**

There are several perspectives in the literature on measurement and transparency as a driver for improvement. For example, the first perspective is that establishing a baseline of performance can be considered a key early step to improvement initiatives. Murphy et al. (2012) described performance measurement as an important activity for establishing the baseline for an improvement effort, ultimately ensuring that all patients or clients receive the targeted intervention and ensuring that interventions are sustained over time.

A second perspective is that measurement is a precursor to transparency and then, together with transparency, serves to energize improvement. As Edmondson (1999) observed “because errors provide a source of performance information and reveal that something did not work as planned, productive discussion associates positively with organizational effectiveness” (Edmondson, 1999, p. 354). This perspective is complemented by the improvement and measurement component of the IHI framework which reinforces and focuses on adjusting and enhancing work processes, together with the need for measurement over time (Frankel et al., 2017).

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A third perspective supports that measurement and transparency can also lead to a high error management culture. Javed et al. (2020) found that a transparent, high-error management organizational culture encouraged employees to identify and report errors as they happen. Conversely, in a low-error management organizational culture, with low transparency, the employees are punished and blamed for committing errors (Javed et al., 2020). Consequently, in a low error management culture that is not supported through measurement and transparency, employees may conceal errors (Javed et al., 2020). Javed et al. (2020) expressed that a high error management culture encouraged employees to learn from mistakes by understanding the causes of an observed outcome. Hence, measurement draws transparency and attention to the errors or variations, which is a source for improvement initiatives and ultimately improved outcomes.

The literature also provided intriguing front-line evidence on the impact of measurement and transparency on healthcare improvement. Sopirala et al. (2014) study observed that a key improvement element that contributed to the success and sustainability of the link nurse program (a local liaison concept) included ensuring that link nurses shared the collected data at monthly staff meetings, guaranteeing that data reached front-line staff. Frankel et al. (2017) and Ovretveit's (2009) work provided insight into the complementary benefits and the importance of measurement and transparency as a driver to change management processes that are key to integrating best practices. Frankel et al. (2017) described transparency as "openly sharing data and other information concerning safer, respectful, and reliable care with staff, partners, and families" as part of a framework for learning and change (p. 9). Ovretveit's (2009) evidence expressed the challenges in improving patient safety included "how to gain accurate everyday data about adverse events and near misses, how to change attitudes and culture towards making patient safety a much higher priority, and how to change provider behaviour in organizations" (p.

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582). Ovretveit drew attention to organizational approaches to patient safety as a “framing error”, and the analysis of adverse events “as the result of a number of causes and rarely due to individual negligence” (p. 582). Such approaches transparently direct an analysis beyond the emotion of an incident, and rather towards the task structure, workflows, and measures within the physical and social environment that need attention (Ovretveit, 2009).

The Agency for Healthcare Research and Quality (AHRQ) (2016), Javed et al. (2020) and Roberts and Casey (2004) provided practical applications to the importance of measurement and transparency in healthcare circumstances. AHRQ (2016) described a *learning from mistakes* process that asked and documented: 1) what happened in the data 2) why did it happen 3) what will we do to reduce the risk of recurrence and 4) how will we know the risk is reduced? According to AHRQ (2016), the act of documentation of a measured variation created a form of transparency that helped codify improvement opportunities and as Javed et al. (2020) discerns, creates an important antecedent of successful organizational performance.

Further, Roberts and Casey (2004) described a guideline-driven infection control self-audit tool that measured and examined infection control practices. The audit tool provided “a valuable measure of the effectiveness of the infection control link nurse network, particularly in relation to staff education, dissemination of information, monitoring infection control practice and identifying infection control issues needing attention” (Roberts & Casey, 2004, p. 168). From a healthcare-oriented performance auditing measure, the AHRQ (2016) discussed performance indicator boards that display unit safety aims and visually monitor the progress toward meeting the unit’s aims. As an aside, AHRQ (2016) suggested that patient names can be visually associated with an incident (if patient privacy concerns are addressed), reminding staff that a real person is associated with each data point.

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In summary, though there were no attributes or evidence from the LTC sector, according to Edmondson (1999), Frankel et al. (2017), Murphy et al. (2012), Javed et al. (2020), Sopirala et al. (2014) Ovretveit (2009), AHRQ (2016) and Roberts and Casey (2004), measurement created a baseline performance standard, energized improvement initiatives, and encouraged a culture of learning from variation and error. From these authors, measurement created the context for transparency and an open accountable environment for learning and change. Through increased accountability, measurement and transparency improvement opportunities are crystalized and the fidelity of planned changes is audited. Hence, measurement and transparency serve several purposes. Measurement and transparency helped to instill an improvement acumen by supporting and sustaining a culture of performance improvement. Further, measurement and transparency have an impact on the effectiveness of a change and provide the benefit of codifying a process improvement for future utilization.

In conclusion, measurement and transparency are a necessary component of improvement work. Through improved transparency and an attitude of measuring variation and errors, a renewed urgency and a focused intention on infection prevention may be possible. Table 7 illustrates the key attributes of measurement and transparency as a critical factor.

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**Table 8**

*Key Attributes of the Measurement and Transparency Critical Factor*

<b>Critical Factor</b>	<b>Key Attributes</b>
Measurement and Transparency	<p>Forewarns or signals a change from baseline performance</p> <p>Supports a high error management culture</p> <p>Supports a culture of learning</p> <p>Audits fidelity of planned changes</p> <p>Ascertsains progress and scale</p> <p>Supports an improvement acumen</p> <p>Provides accountability</p> <p>Codifies improvement opportunities</p>

However, what is missing in the literature is how measurement and transparency impact improvement work in LTC homes, especially as it relates to infection prevention practice. Moreover, from my research perspective, the logical next issue is understanding how an improvement initiative responds to an unacceptable measurement result. Logically, as a response, something different must happen (or be actioned) to achieve a better result. As presented in the next section, a response to a finding is often manifested in the development of new knowledge, skills, and abilities within the workforce.

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## ***Individual Team Member-Based Competency Development as a Critical Factor for Best Practice Implementation***

Learning is a constant feature of our individual lives. For example, many regulated health professions require the submission of an improvement portfolio of education credits. These credits are directly aligned with the profession's core competencies and are essential to maintaining a practice license. In the LTC home context, situations constantly emerge through which healthcare workers must systematically learn to adjust and adapt behaviours to cope with events like infections. Consequently, the effectiveness of individual competency development and continuous learning efforts is a critical factor and potentially foundational for my interest in advancing the effective implementation of infection prevention protocols.

This section explores individual competency development as a potentially critical factor that creates consistency in the execution of evidence-based infection prevention practice initiatives in LTC homes. The section begins by describing competence in work settings, why attention to individual competence is important in propagating best practices, perspectives from the literature on competency development, evidence of effective competence development, and what is left unanswered in the literature from my research perspective.

Infection prevention practices need to be delivered according to an effective standard. However, variation exists between achieving an expected standard and the actual delivery experience. A likely contribution to this variation emanates from the mismatch of an individual's competence to the demands of a work situation.

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### **What is competency?**

Legatt (2007) described competency as a team member's abilities, skills experience, attitudes, values, role perceptions and personality that will determine an individual's contribution, motivation, interaction and acceptance of a group's norms and an organization's goals. This description supports the perspective that an organization's attention towards the development of an individual's competencies is an important precursor and enabler for reducing variation, improving team effectiveness, as well as the uptake of new individual behaviours that target improvement initiatives.

### **Why is attention to individual competency development important?**

The literature provides several rationales as to why a focus on individual competency development is important. First, to achieve an effective standard throughout an organization, Rogers (2002) described the diffusion of innovation as "an idea, practice, or object that is perceived as new by an individual" (p. 990). Rogers (2002) continued by explaining "the characteristics of an innovation, as perceived by the members of a social system, determine its rate of adoption" with an individual's perception of characteristics of the relative advantage, compatibility, complexity, trialability, and the observability of the initiative ultimately contributing to its adoption (Rogers, 2002, p. 990). This is important as Rogers (2002) described the knowledge/innovative decision process as the mental process, or personal perception, through which "an individual (or other decision-making unit) passes 1) from first knowledge of an innovation, 2) to forming an attitude toward the innovation, 3) to a decision to adopt or reject, 4) to implementation of the new idea, 5) to confirmation of this decision" (p. 990). Hence, mental processes or personal perceptions become an important enabler to improve knowledge diffusion.

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Second, attention to individual competency development is important from a motivational perspective as there is recognition that to improve, individuals need the ability to be motivated to learn a new standard of behaviour. White et al. (2015) observed that the “best determinant of behaviour is the intention, which is influenced by three factors: attitude, subjective norms, and perceived behavioural control” (p. 2). Examples of motivated learning behaviour were described as “seeking feedback, sharing information, asking for help, discussing errors, and experimenting” (Edmondson, 1999, p. 351). These conclusions agreed with Rogers's (2002) work which expressed, as a motivational factor, that the perceived relative advantage of an intervention becomes the most important predictor of the rate of individual adoption of innovations. Hence, personal motivation is an important attribute to understand in the development of competencies.

Third, Edmondson (1999) explained that once a behaviour is learned, team members can begin to perceive environmental changes, evolving customer requirements, an improved understanding of a situation, and as a key component of continuous learning, discover the unexpected consequences of previous actions. This observation follows closely with the findings of Jordan et al. (2009) who suggested a predisposition for learning must continually take place as the environment is constantly changing. According to Jordan et al. (2009), individuals must learn from their actions, and, at the same time, they must act from what they learned. Jordan et al. (2009) reflection summarizes the application of learning to a changing context.

### **Key Perspectives from the Literature on Competency Development in Individuals**

There are several key issues or perspectives advanced in the literature regarding competency development in individuals. The literature provides awareness that there are barriers

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to learning a new or accepted practice standard. First, Cooper (2004a) determined that a theory/practice gap has existed for many years due to issues such as “poor access to new literature, organizational restraints, lack of critical appraisal skills, and individual inability or unwillingness to change practice” (p. 24). Further, Cooper discerns that stakeholders need to view the “relevance of information to their own situation, or there will be reduced interest in learning” (Cooper, 2004a, p. 25).

Second, Jordan et al. (2009) described that “learning is often inhibited in health care organizations by the ways that organization members are socialised, by existing routines, and status relationships” (Learning, para. 4). Likewise, Brandt (2018) observed that poor preparation of a health care professional generates adverse outcomes such as low provider and low patient satisfaction, a greater number of medical errors and other patient safety issues, low workforce retention, system inefficiencies resulting in higher costs, and suboptimal community engagement. Brandt (2018) suggested that the main inhibitors to individualized learning included scheduling times and classrooms to meet, siloed and rigid curriculum, tensions between professionals and specialties, and lack of perceived value. Finally, Jordan et al. (2009) observed that learning often occurs in circumstances of partial knowledge that make causal linkages and prediction difficult for the learner.

In contrast, the literature identified evidence of several approaches to overcome the above inhibitions or barriers to the learning of a new practice. First, Goreshnik et al. (2022) studied a jigsaw learning activity by individuals to augment formal instruction or structured experiences. Through jigsaw learning individual students gather information and teach one another a segment of the findings. This method was shown to improve engagement and

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knowledge retention (Goreshnik et al., 2018). The authors found the strategy increased learner confidence.

Second, Kang and Kim (2021) examined the flipped classroom in the education of public health learning elements. Through the flipped classroom approach, the student acquired foundational knowledge before class and then integrated this knowledge into the classroom environment (Kang & Kim, 2021). Problem-solving abilities and learning accountability increased through instructor-to-student and student-to-student interventions and, at the same time, the technique improved learning outcomes, knowledge acquisition, as well as problem-solving skills (Kang & Kim, 2021). This finding compared favourably with the Goolsarran et al. (2018) flipped classroom approach which included: using evidence-based reading and voice over power point; testing with faculty and feedback; rational and clarification; as well as a high-fidelity manikin and standardized patient designs to reinforce workshop objectives through hands on activities. It was found that simulation through a flipped classroom approach achieved higher levels of competencies and safer care.

Third, the Haber and Boomershine (2015) study amplified the above findings through which students analyzed and interpreted scientific literature to make evidence-based decisions in care. As observed in the Haber and Boomershine (2015) study, learning concepts were selected to reinforce previous material and to provide a well-rounded learning experience. Components of the study's approach included required reading, individual and team tests, class discussion of tests, application activities, discussion of the application activities, and peer evaluation (Haber & Boomershine, 2015). The study emphasized the required fidelity of the above components to achieve success.

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Finally, Bhattacharya et al. (2021) examined methods to prepare individual healthcare workers to work collaboratively and treat common conditions in geriatrics. Findings revealed that the team members needed to meet regularly to share ideas, contributions, benefits, and challenges. Individual methods for learning also included sixty minutes of prework, a self-test, and then a discussion of results (Bhattacharya et al., 2021).

In conclusion, the concept of individual competency development and continuous individualized learning appeared in the literature as a key element of consideration for improvement initiatives as well as for the achievement of care standards within an LTC home. Structural or functional activities related to developing competency and individual continuous learning activities appear as a critical antecedent for the need to test knowledge-based assumptions, recognize errors as performance information, and adjust to the nonlinear experience of an operating environment that ultimately requires thoughtful reflection, accommodation, and revised actions. Hence, continuous individualized competency development could be considered a critical enabler to investigate within LTC organizations especially as it relates to the effort to integrate new standardized infection control processes, create superior outcomes, and create improved situational understanding.

### **What is left unanswered?**

Based on my survey of the literature, approaches to competency development in LTC settings, especially as it relates to the transfer of infection prevention protocols into the frontline workforce, remain unanswered as no author cited above directly attributed a finding to the LTC sector. A question that also emerges from the literature: what are the best formats, the required baseline knowledge, and the best techniques for enabling practice improvement in an LTC

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environment? A question also remains as to whether inconsistent competency development techniques can lead to a source of variation.

### **How relevant is individual competency development to my research?**

The understanding of how certain LTC homes were successful in implementing best practices is critical to my research aims. Understanding whether attention to individual competency development was a discriminating factor and whether the foundational tactics are transferable is of importance. Hence, an objective of primary research is to observe evidence of attention to individualized learning as a foundational part of the LTC home's improvement plan. Further, if individual learning emerges as a critical factor, how was it systematized, and was there a promising practice to enable improved outcomes? Table 8 illustrates the key attributes of the Individual Competence Development Critical Factor.

**Table 9**

*Key Attributes of the Individual Competency Development Critical Factor*

Critical Factor	Key Attributes
Individual Team Member Competency Development	<p>Dependent on the level of personal preparation</p> <p>Dependent on the level of personal motivation</p> <p>Supports preparation for a changing context</p> <p>Impacted by individual approaches to learning</p> <p>Impacted by organizational approaches to learning</p> <p>Enables individual decision-making</p>

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To continue with this literature review, it is important to acknowledge that employees in LTC homes work in social settings. Building on the individual competency development discussion is the concept of collective education by coordinated groups or teams. The next section explores this concept.

### ***Collective Learning as a Critical Factor for Best Practice Implementation***

Healthcare-oriented work is increasingly taking place in multidisciplinary teams as observed when a variety of healthcare professions intersect with an individual patient in a healthcare setting. Thus, each member of the multidisciplinary team must have a common understanding of the team's approach to care. Teaching hospitals build on this concept using grand rounds, which are commonly a monthly multidisciplinary case study event which provides a collaborative opportunity for team members to discuss and learn about symptoms, diagnosis, treatment, and outcomes from a particularly interesting admission.

Intuitively, a team that works together effectively has an awareness of the capabilities and capacity of its team partners. This observation should also be true in LTC homes where frail individuals with multiple comorbidities potentially require attention from various professions within a care team. The next section of the literature review examines concepts in collective learning, as a critical factor of influence aligned with the implementation science goal of the embodiment of new behaviours in front-line staff.

### **What is collective learning?**

Singer et al. (2015) defined collective learning as “a process for gaining information, understanding, or capabilities in a group and organization” (p. 92). Further, in reviewing studies linking collective learning, quality, and safety improvement, Singer et al (2015) found that four types of collective learning practices emerged. These four practices included: experimentation to

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develop and test new ways of doing things; acquisition of knowledge from experts, customers, and the organization's own experiences; monitoring of performance; and training to develop workers' skills.

### **Why is collective learning important?**

Singer et al. (2015) work found that an organization benefits from the learning process if activities are clearly aligned with the goals of the learning collaborative, if its members have equal access to information and communications, and if interactive analysis and interpretation occur. As Singer et al. (2015) demonstrated, the process of collective learning created a shared view of an initiative amongst the multidisciplinary team and with the shared view, better appreciation, interaction, and coordination may occur among team members. Therefore, with better coordination of the efforts and the behaviours of front-line workers, there is presumably an improved opportunity to achieve superior patient outcomes.

Though there is a paucity of literature on the intersection of collective learning and patient outcomes, a key issue is noted through Rangachari's (2020) work, which identified that collective learning is complicated by the influence of professional expertise and the values that underlie individual profession-specific behaviour. Specifically, each profession-specific group focused on their own goals such that activities were reinforced within their subgoals and profession-related motivations (Rangachari, 2020). Hence, to overcome this barrier, when organizations are subject to rapid changes or challenges, such as infectious events, to achieve organizational goals organizations must facilitate organization-wide knowledge-sharing and learning processes to create cognitive connections (Rangachari, 2020). In essence, as a core issue, collective learning initiatives in healthcare settings need to be structured and experienced to generate collective cognitive alignment in an implementation initiative.

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In the literature, there is considerable evidence of the importance of collective learning in improvement contexts. First, Joshi et al. (2022) discerned that problem-based education experiences emphasized learner-led small-group learning where engaged individuals benefited from active involvement in facilitated groups to solve complex, unstructured problems that mimic real-world scenarios. The collective approach developed classroom activities based on a significant problem to work on, the same problem to work on, the need to make a specific choice, and to culminate the experience by making a simultaneous report or response (Joshi et al., 2022). The approach comprised of pre-class preparation, individual readiness assessment tests, team readiness assessment tests, and was followed by feedback and problem-solving activities. According to Joshi et al. (2022), the approach improved engagement, understanding, and communication skills and led to better patient outcomes.

Second, Rangachari (2020) identified it important for groups to modify mental models, and knowledge through the four phases of socialization, externalization, combination, and internalization. Without the above interventions, groups and subgroups will easily revert to previous patterns of action. As such, organizations must make ongoing proactive efforts and create knowledge-sharing structures rich in brokerage, boundary-spanning, and double-loop learning to create collective tacit knowledge (Rangachari, 2020).

Third, to complement Rangachari's (2020) findings, Bunniss et al (2012) examined how healthcare professionals with diverse backgrounds, training, and experience navigated the challenges of collective learning. The author's findings identified important qualities of collective learning such as openness, trust, outward-looking, absence of complacency, and belief in human potential. The research identified the use of a learning practice inventory as a diagnostic instrument to identify which qualities an organization experienced (Bunniss et al.,

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2012). Furthermore, Bunniss et al. (2012) found that informal collective learning in healthcare teams was experiential (learn by doing) and implicit (over time, teams learn to intuitively know and anticipate each other). Finally, experiential learning took place by interpreting feedback, identifying shared priorities, and planning action steps (Bunniss et al., 2012).

Fourth, according to Rapport et al. (2021) research, to set the stage to produce results and actionable change, an improvement initiative must foster a community of practitioners, consultants, and researchers to create a learning community. As a key finding, a learning community often requires a system thinker who shares knowledge across boundaries, can explore gaps in a system, and can identify leverage points for better outcomes. Rapport et al. (2021) found that specific events can be designed that foster relationships, create a setting for collective reflection, opportunities for shared understanding, and leverage progress through institutional links. Further, Rapport et al., (2021) work found several success factors to enable communities of practice: preparedness for change, capacity of the people to support implementation, appropriateness of the selected implementation strategy, leverage, establishing the enablers of implementation, and sustainability.

Fifth, Providenza et al. (2020) examined the results of a knowledge transition facilitation network developed to meet the knowledge transfer needs of individuals within a team. The team was then expected to use and produce knowledge in an academic health sciences centre. In Providenza et al. (2020) work, different disciplines engaged in active learning and discussion, critical thinking, peer learning, reflection, the integration of new perspectives, as well as beliefs related to knowledge transfer. The authors observed education strategies that included storytelling, case studies, consultation, independent knowledge transfer planning, videos, guest lectures, participant presentations, simulation, and a think-pair-show activity. The participants

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were provided with binders of lecture slides, reading lists of seminal papers, and worksheets and then a simulation was incorporated to support the individual participant's confidence to apply the acquired knowledge and concepts (Providenza et al., 2020). Small cohort groups allowed perspectives and experiences to be shared and connections amongst related work identified (Providenza et al., 2020).

In reflection, the evidence from the literature for this section concludes that carefully planned collective learning is a factor for attention, appears as a potentially important precursor to an evidence-based implementation process, and has a potential amplification toward the strength of its effect on outcomes. As a function, collective learning may provide significant leverage to competency development approaches and ultimately the transition of evidence-based practices into front-line workers' work behaviours. Much like the other factors discussed in this literature review, collective learning is just one building block supporting how LTC homes can enable the adoption of evidence-based practices.

### **What is left unanswered in the literature on collective learning and its impact on resident outcomes?**

As with other sections of this literature review, the connections or relevance to LTC homes and the evidence of the need to develop multidisciplinary collective education opportunities in LTC homes are limited. There are also unanswered questions regarding the resources and time investments that are required in collective learning initiatives that may not be available to LTC home staff. Finally, none of the authors cited in this section linked findings with LTC, and it does not appear that research work has been generated on whether successful LTC homes have taken the time to address collective learning as an enabling factor, and if so, how did they proceed? Regardless, in the environment of a LTC home seeking to integrate best

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practices, collective learning appears as a factor for investigation due to its clear connection with performance.

### **What are the implications for my research?**

My research will strive to observe if collaborative learning is a key step or factor in the successful implementation of best practice protocols in LTC homes. The research initiative will also strive to understand to what extent this step contributes to embedding infection prevention behaviours in LTC work teams. The intended impact of my research will be to determine, through the investigation of LTC homes, any observations of collective learning either as a consideration or as a significant functional or structural activity that contributed to an observed outcome. Table 9 illustrates the key attributes of the Collective Learning Critical Factor.

**Table 10**

*Key Attributes of the Collective Learning Critical Factor*

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<b>Critical Factor</b>	<b>Key Attributes</b>
Collective Learning	<p>Provides a process for gaining understanding as a group</p> <p>An equal and interactive analysis of information</p> <p>Overcomes profession-specific barriers</p> <p>Supports modification of mental models</p> <p>Provides a system thinking approach</p> <p>Amplifies change effect on outcome</p> <p>Modifies a group's mental model</p>

However, it is suggested that a structure for collective learning is not enough. LTC homes need to encourage work in coordinated team structures due to the implicit nature of the core work of caring for residents with multiple comorbidities. The next section examines the development of team-orientated competencies.

### ***Team Competencies Development as a Critical Factor for Best Practice Implementation***

To achieve optimal outcomes, the frontline workforce of an LTC home must not only learn together but must coordinate and integrate their activities within a process that adds value for the patient. For example, Advanced Cardiac Life Support programs provide a structured opportunity for a team to test out their skills and knowledge on a sequential cardiac arrest simulation. Each team member has a distinct role and requires precise timely execution of that role to achieve a certification. Similarly, integrated team-orientated skills and abilities, or competencies, are considered in this research dissertation as a key factor of influence for the successful transition of infection prevention evidence-based practices into coordinated and sustained LTC home

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workplace activities. To this end, the following section examines findings in the literature related to team competency development.

### **What is team competency?**

While competence is defined as a specialized system of abilities, proficiency or skills enabling a person, team, or organization to act and react when completing concrete, familiar, or novel working tasks, team competency is identified as the knowledge, skills, and attitudes required to be an effective team member (Byrd et al., 2004 and Kauffeld, 2006). In other words, team members must have the skills to interact with each other, share information, make joint decisions, and collaborate to achieve the group's goal (Kauffeld, 2006).

### **Why is focusing on team competency development important?**

Legatt (2007) identified several reasons why team competency development is essential in healthcare settings. First, Legatt (2007) established that teamwork is imperative in complex healthcare settings as no single professional can alone deliver a complete episode of care nor achieve optimized outcomes. Second, Legatt (2007) identified that team-based learning must be supported by a motivation and a commitment to work collaboratively, achieve quality outcomes, and experience a commitment to the organization. Therefore, motivation and commitment to team processes need to be instilled as a focus in team-oriented competency development initiatives and the achievement of optimized outcomes.

### **Key perspectives emerging from the literature on team competency development initiatives in healthcare settings.**

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First, Legatt (2007) asserted that the essential teamwork skills necessary for optimized outcomes are largely learned in the practice setting through interdisciplinary efforts. Second, Nakamura (2018) identified that team-based competency development involves a preparation process, an individualized readiness assessment, a team readiness assessment, an application exercise, and a peer evaluation. Combining the two perspectives demonstrates that the development of team competency in a healthcare practice setting requires a carefully orchestrated and structured implementation plan to achieve success.

The literature revealed compelling evidence about the comprehensive mechanisms to generate and implement team-based competencies. In separate studies, Gorsuch et al. (2020) and Theis et al. (2020) examined complex strategies for team-based competency development in emergency departments and primary care organizations respectively. Gorsuch et al. (2020) demonstrated that an extensive formalized *evidence-based practice* (EBP) education and skill-based building program positively affected EBP knowledge, skills, competencies, and attitudes; and notably, the attributes were sustained over time. The initiative found that leadership support, EBP mentors, EBP councils and dedicated resources were essential variables for the successful integration and sustainability of EBP in a team environment. In fact, Gorsuch et al. (2020) found that EBP councils became a critical infrastructure element for EBP team success. Theis et al. (2020) observed the same success through a detailed and systematic approach to changing practice that included assessing the practice and then using fishbone diagrams and process maps to focus on specific improvement learning initiatives. A notable finding, the research identified the need for protected time to meet regularly, have access to reliable coaching, create a context conducive to change, and an attention to detail in advancing the change (Theis et al., 2020).

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In other work, Liu et al. (2021) evaluated the implementation of interprofessional teamwork modules in an emergency department. Didactic instruction and practice scenarios were utilized in this initiative. A unique observation from Lui et al. (2021) were the findings of a fidelity for the following team-orientated elements: 1) starting a shift with a briefing, 2) keeping a steady pace of activity, 3) assessing a new patient together, 4) immediately carrying out all patient activities, and 5) ending a shift with a briefing. Despite initial success, Liu et al. (2021) noted that after eighteen months of the introduction of the modules, a significant decay of the fidelity of the above team-orientated elements was observed. This decay of the team-orientated elements over the long term is interesting to note given it demonstrates an implication of a need to re-learn or refresh the desired practice regularly.

Flynn et al. (2021) examined implementation science laboratories as a mechanism to integrate an evidence-based approach to systemic improvement and to support a learning health system. According to Flynn et al. (2021), the model's framework included: 1) a steering committee whose role was to identify and compile pragmatic issues faced by healthcare teams, 2) a scientific advisory board whose role was to review issues from the steering committee and provide recommendations to help build knowledge of how to respond to widespread barriers, and 3) a workgroup to lead engagement and facilitate embedding implementation through the process of distributing guidelines, identifying supports, brokering relationships and the collecting and synthesizing of the lessons learned (Flynn et al., 2021).

In summary, key observations from the findings of Gorsuch et al. (2020), Theis et al. (2020), Liu et al. (2021) and Flynn et al. (2021) concluded that skills learned in a practice setting require a careful preparation process or systematic approach. Moreso, the approach needs to be constantly refreshed to sustain the behaviour in a team-based setting. Finally, a clear motivation

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must be established, and a key set of steps needs to be outlined and followed through an accountable oversight mechanism. Unfortunately, the authors cited in this review did not examine results from the LTC home sector.

### **What is still unanswered from this section of the review and what is the relevance?**

Given my focus on LTC homes, the unanswered questions are: 1) has a disciplined, coordinated, team-based approach been found in LTC home improvement initiatives and if so, 2) what were the approaches taken, and 3) is there a uniqueness to the LTC homes context that needs to be factored into a team competency development initiative? In terms of relevance, it must be understood that if improved resident outcomes are a key objective for complex settings like LTC homes, when an event occurs, such as a deadly airborne infection, is a competency-based team approach required to address the threat facing the institution? It is also relevant to understand whether LTC homes have established a process to develop competency-based teams to help drive the adoption of best practices.

How does a finding regarding team-based competency development impact my research? Through my research, I intend to observe within LTC home settings whether there is evidence of pragmatic attention to team-based skill development in the practice setting and whether the process was then followed and sustained over an extended period. Further, research needs to examine whether there is a relationship between team-based competency development strategies, as a critical factor or influence, and improved resident outcomes.

In summary, team competency development appears as an important factor to consider in enabling the transition of evidence-based competencies and practices in LTC homes. The need for synergy, coordination, and integration of individual team members' behaviour sparks interest

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in how an organization systematically approaches its practice transformation. I would note that the attention to preventing the decay of planned activities over the long term emerged as an interesting and unexpected insight from this section of the literature review, which may require additional focus in future research efforts. Finally, a highly coordinated team approach accompanied by a learning infrastructure appears critical to the generation of infection prevention team-based competencies as an important leverageable factor in LTC homes. Table 10 illustrates the key attributes of the Team Competency Development Critical Factor.

**Table 11**

*Key Attributes of the Team Competency Development Critical Factor*

<b>Critical Factor</b>	<b>Key Attributes</b>
Team Competency Development	<p>Creates an attention to skills needed to be an effective team member</p> <p>Helps mitigate the complexity of the healthcare setting</p> <p>Requires a significant process, is carefully orchestrated and structured</p> <p>Increases collaboration</p> <p>Enhances an enabling structure</p> <p>Creates the establishment of an accountability mechanism</p>

Next, once individual competency and team-based competency have been established, the individual healthcare worker needs to be able to develop a pragmatic attitude as they attempt to incorporate the new skills. This literature review continues by examining the factor of

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psychological safety as an important enabler in generating and embedding change at the worker level. The worker and the continued fidelity of their actions through personal confidence are key to creating the optimized resident outcome.

### ***Psychological Safety as a Critical Factor for Best Practice Implementation***

The caregiving process, especially in frail seniors, has the potential to involve significant risk due to the aging, comorbidity, and cognitive impairment of the senior. Therefore, LTC home workers must take great care to deliver a service that is safe and effective, and together, each member of the team must contribute and be vigilant to this end. Hence, a psychologically safe climate is considered paramount to enable, create and reinforce the best possible results from every care team member. An illustration of a psychologically safe practice is found in the surgical programs of hospitals. During a surgical procedure, any member of the surgical team can stop a critical surgical process if the context suggests a threat or a lack of state of readiness for the patient. In this psychologically safe environment, there are no repercussions for the team member who speaks out.

### **What is psychological safety?**

Edmondson (1999) defined team psychological safety as a shared belief that a team environment is safe for taking interpersonal risks. Further, according to Edmondson (1999), a climate grounded in patient safety describes a work environment where employees are safe to speak up without being rejected or punished. Agarwal and Farmdale (2017) described the term psychological capital as the “positive and development state of an individual as characterized by high self-efficacy, optimism, hope and resilience” (p. 441). Individuals high in psychological capital are adaptive to change, creative, and persistent (Agarwal & Farmdale, 2017).

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### **Why is a focus on psychological safety important?**

Edmondson (1999) found strong support for an association between team psychological safety and team learning behaviours, which in turn relates to team performance. This complements Ito et al. (2021) study, which demonstrated that psychological safety in the healthcare work environment influenced practice behaviours such as asking questions, reporting errors, and communicating openly. According to Ito et al. (2021), psychological safety provides an association with strong interpersonal relationships and an effective culture that includes collaboration, trust, innovation, and ensures patient safety. Thus, Edmondson (1999) and Ito et al. (2021) observations suggest that a psychologically safe climate should be consciously incorporated into change management processes that can be especially relevant for LTC home infection prevention practices.

### **Key Perspectives from the literature on psychological safety**

A perspective evident in the literature is the need for high team collaboration and interpersonal effectiveness through a mindset of psychological safety. Baer and Frese (2001) examined the need to develop organizational climates in which participants in a change process “feel safe in taking personal risks, are encouraged to propose new ideas, openly discuss problems, and proactively approach work” (p. 46). A characteristic common to process innovation is the increased focus on cooperation whereby successful cooperation requires a climate in which employees feel safe in displaying proactive behaviour in a social context (Baer & Frese, 2001). This aligns with Edmondson (1999) where the author discerned, as part of the learning process, for a team member to “discover gaps in its plans and make changes accordingly, team members must test assumptions and discuss differences of opinion openly rather than privately or outside the group” (p. 353).

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Agarwal and Farmdale (2017) also offered a process improvement perspective to the discussion of psychological safety. In Agarwal and Farmdale's (2017) work, a psychological safety perception emerged revealing that the benefits of speaking up outweigh the costs of speaking up. In contrast, a low level of psychological capital may hinder involvement in a creative process; hence, psychological capital development through a psychologically safe context creates conditions necessary for process improvement. Agarwal and Farmdale's (2017) work concluded that a focus on psychological safety is relevant as it allows for smoother collaboration in problem-solving, adaptation to change, best practice implementation, and knowledge creation. To foster psychological safety, managers can create practices such as shared goals, shared knowledge, mutual respect, job freedom, and autonomy (Agarwal & Farmdale, 2017).

The literature provides intriguing evidence of the need for a psychologically safe environment. Huang and Liu (2021) work found that to achieve a common goal, group members shared knowledge, insights, and resources with one another. The authors found teams that applied systematic, in-depth information processes to decision-making required in-depth communication and integration through information elaboration. This finding is relevant in quality healthcare delivery where, in the presence of multiple comorbidities, diverse expertise on decisions and treatment must be coordinated (Edmondson et al., 2016). As the Huang and Liu study concluded, teams with a strong, psychologically safe climate have greater information elaboration, which is critical for quality care delivery.

Further, Edmondson et al. (2016) discerned that in the healthcare context, individuals are bound by high-stakes accountability systems, professional norms, and organizational structures that make psychological safety relevant. To ensure quality of care, especially in the presence of

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multiple health comorbidities, diverse experts must coordinate their decisions and treatments (Edmondson et al., 2016). Moreso, in healthcare team-based efforts that are focused on learning and improvement, limitations can exist from the challenge of speaking up across status lines. Consequently, hierarchy and structure can impede psychological safety (Edmondson et al., 2016). As such, leader effectiveness through behaviours such as acknowledging fallibility and proactively seeking input, as well as reducing the status gap within a team, can support greater psychological safety (Edmondson et al., 2016).

Further evidence of the importance of psychological safety emerged from Koopman et al. (2016). Koopman et al. (2016) found a “team psychological safety climate is a strong predictor of team plan formation and execution because it facilitates the combination of knowledge and divergent perspectives” (p. 942). In a psychologically safe climate, average team member performance was likely to benefit because members felt comfortable discussing errors, asking for help, and soliciting performance feedback (Koopman et al., 2016). Of interest, Koopman et al. (2016) found, though strong in the early stages of team formation, interactions may become strained as individuals learn about each other’s values and beliefs not being as similar as previously perceived. However, with time, team members developed a deeper understanding and learned how to work together (Koopman et al., 2016).

Finally, Leggat’s (2007) work identified strong support for the benefits of a psychologically safe environment for team members. According to Leggat (2007), team members who demonstrated commitment by communicating organizational goals and objectives, and then assisted their team colleagues in translating the needs of the organization, led to improved performance outcomes for the team. Leggat (2007) found a demonstrated commitment to collaboration and quality existed by facilitating the needed psychological safety among team

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members, which enabled team members to discuss and learn from mistakes, and to challenge their team colleagues as required for quality outcomes.

### **What can be concluded from the literature?**

This section's examination of the literature concluded that psychological safety influenced team learning behaviour, influenced practice behaviour, collaborative relationships, team focus, quality of information exchange, improved execution, and performance outcomes by teams. The literature also concluded that psychological safety can be an enabler to overcoming systemic barriers.

### **What is left unanswered and what is the impact on my research?**

What continues to be missing from the literature is research underscoring the impact of psychological safety as well as the degree of importance of psychological safety in LTC homes. As in previous sections, of the authors cited above, no evidence of LTC home experience was observed. Specifically unanswered, does psychological safety have an impact on the integration of best practice protocols into LTC home front-line practice? With these unanswered questions, attention is required on whether a focus on psychological safety is a key ingredient that is required in LTC homes' quality and performance improvement initiatives (given it appears important in other sectors represented in the healthcare literature). Further, is psychological safety a critical element in advancing best practice protocols into LTC home front-line work behaviours? Accordingly, research will need to observe whether LTC organizations create purposeful attention to creating a psychologically safe environment and whether there is a connection with patient outcomes. Table 11 illustrates the key attributes of the Psychological Safety Critical Factor.

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**Table 12**

*Key Attributes of the Psychological Safety Critical Factor*

Critical Factor	Key Attributes
Psychological Safety	<p>Creates a safe environment for personal risk</p> <p>Can speak up unencumbered</p> <p>Influences an adaptive practice behaviour</p> <p>Enhances cooperation</p> <p>Enhances problem-solving and collaboration</p> <p>Enhances knowledge creation</p> <p>Facilitates information elaboration in a complex environment</p>

In summary, psychological safety appears as a key interpersonal ingredient in opening a pathway to the acceptance of new knowledge and improvement activity processes for evidence-based practices. Psychological safety's impact on teams, organizations, and individuals appears profound. Clearly, psychological safety is an enabler to be considered and a dimension to be evaluated in a LTC environment that strives to improve its performance and resident outcomes. Next, this literature review examines a factor that shapes individual competencies and behaviour – cognitive aids.

### ***Cognitive Aids as a Critical Factor for Best Practice Implementation***

The recent COVID-19 pandemic has provided numerous examples of cognitive aids such as emphatic signs requiring customers to mask and social distance. In the shaping, embedding, and sustaining of desired practice protocols in LTC homes, cognitive aids can play a role in ensuring the fidelity of desired behaviours and actions. In short, as functional mechanisms,

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cognitive aids help guide the decision-making capacity of front-line workers by bringing evidence-based thinking into consciousness.

### **What are cognitive aids?**

Goldhaber-Fiebert and Howard (2013) described cognitive aids as tools to help people remember to act on important information that they often already know but may be nondeployable. Fletcher et al. (2014) described cognitive aids as prompts that encourage the recall of training information to increase the likelihood of desired behaviours, decisions, and outcomes. Specifically, Fletcher et al. (2014) identified five generalized types of cognitive aids. These are: 1) Alarms as warnings that increase situational awareness, vigilance, and advise required actions. 2) Physical tools as devices aimed at reducing human error such as providing different-sized tubes, preloaded syringes, and other instruments that have often been pilot tested. 3) Mnemonic devices as patterns of letters used to represent and aid in the recall of connected sequential items. 4) Reminders or physical elements such as posters, signs, warnings, or pictures placed in visible areas. 5) A checklist as a tool that outlines critical steps, simplifies concepts, and aids in information recall.

### **Why are cognitive aids important as a key area of focus?**

Fletcher et al. (2014) suggested that cognitive aids prevent the decay of both technical and non-technical skills required in the context of a work environment. Goldhaber-Fiebert and Howard (2013) agreed with Fletcher et al. (2014) that without cognitive aids, rapid decay of

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training occurs. Hence, cognitive aids assist in the fidelity of necessary skills in multiple work contexts.

The literature provides several insightful perspectives that may facilitate the sustained achievement of best practice protocols in the event of an infectious crisis using cognitive aids. First, Fletcher et al. (2014) and Goldhaber-Fiebert and Howard (2013) together provided perspectives on cognitive aids as assisting in the increased recall or a quicker retrieval of the desired behavioural intentions. Marshall (2013) and Alidina et al. (2018) observed cognitive aids as tools to prevent omissions that are caused by stress or the infrequency of an intervention's use. Standiford et al. (2020) and Clay-Williams and Colligan (2015) observed checklists as cognitive aids that help to facilitate enablers or overcome barriers to evidence-based delivery and as a prompt to help understand if something is not working. Dixon Woods et al. (2011) observed cognitive aids as a tool to help create a ritual or as an expressive function that creates a focus on a particular event. Finally, Gaba's (2013) work warned of the perils of a poorly constructed aid.

Goldhaber-Fiebert and Howard (2013) suggested that a cognitive aid should be in a format that is 1) sufficiently complete to encourage consultation without being overwhelmed, 2) relevant for the intended clinical environment, and 3) organized in a manner such that it is easy to find during a crisis event. Moreover, the authors provided five considerations for creating effective checklists that include: context, content, structure, images, and usability (Goldhaber-Fiebert & Howard, 2013).

Continuing the discussion of perspectives found in the literature, Marshall (2013) outlined that the main difference between cognitive aids versus guidelines, protocols, or standard operating procedures is that cognitive aids are used while the task is performed, particularly during an emergency. This aligned with the observation of Alidina et al. (2018) that medical

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judgment and decision-making can be compromised in stressful situations and, correspondingly, a clinician may not have experienced a crisis for many years, offering additional compromise to the situation. Further, Alidina et al. (2018) identified that judgment and decision-making can be compromised because of problems with memory retrieval, fixation with an incorrect problem, loss of situational awareness, or other cognitive problems occurring due to stress. An individual's crisis response can suffer from the failure to access knowledge under stress as well as from augmenting poor team communication, which may result in deviation from established guidelines (Alidina et al., 2018). Likewise, according to Marshall (2013), cognitive aids guide a stressed clinician through a sequence of complex steps and prevent the clinician from omitting key actions as well as preventing unnecessary measures.

Finally, Gaba (2013) wrote about the utility, design, implementation, and perils of cognitive aids. Gaba (2013) indicated “that a process of adapting, placement, training of personnel, and creating and sustaining a culture that emphasizes and rewards use is necessary but difficult” (p. 1035). Accordingly, Gaba (2013) discerned that poor aids or poor use of aids may distract the clinician and lead to worse performance. Gaba also wrote of the role of a cognitive aid reader (narrator) who reads the aid to the team during the event, checks on progress in managing the event, and provides an emphasis on the practice issues of greatest performance.

The literature provides fascinating evidence regarding the importance of cognitive aids in the execution of best practices. Alidina et al. (2018) identified eight key steps to enable the effective implementation of cognitive aids including: presenting the cognitive aid at meetings, forming a multidisciplinary team to provide oversight and advice, customizing the cognitive aid to facilitate the local context, pilot testing the aid, providing training for the aid, delivering ongoing training, monitoring the use of the cognitive aid, and expanding the use of the aid

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beyond the immediate area of concern. Marshall (2013) found cognitive aid properties should include: content that is derived from best practice guidelines, a design appropriate for use in the context of an emergency situation, an aid that should be familiar as a format recognized in practice or training, and an aid that should assist other team members to perform their tasks in a coordinated manner. Marshall (2013) observed that those who learned about the cognitive aid in formal orientation are much more likely to use it.

Standiford et al. (2020) studied the frequency of lean tools and implementation determinants frameworks, or checklists, that were used concurrently in healthcare quality improvement. According to the author, an implementation determinant framework or checklist can be used during an *analysis phase* to better understand specific facilitators and barriers to high-quality, evidence-based delivery. A checklist can then be used during the *recommendation phase* to help select the best countermeasures and strategies. However, if the patient was not responding to the interventions, Clay-Williams and Colligan (2015) suggested the team would examine checklists or algorithms to ensure steps have been properly executed or not forgotten.

Dixon-Woods et al. (2011) work observed that the “creation of ritual” is important for reliability, given that “remembering is fundamentally a social activity”, and “rituals are a form of collective remembering that reinforce important events” (p. 188). Dixon-Woods et al. established in their research that a checklist “helped institutionalize good practices by making insertion of central venous catheters into a routine with some of the characteristics of a ritual” (p. 189). Using a checklist gave structure to the insertion process of the catheter while helping identify the intervention as a “bounded episode” separate from other simultaneous activities (Dixon-Woods et al., 2011, p. 189). Complying with the checklist increased the visibility of individual

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contributions to the process and “eliminated the problem of social loafing” where people individually make less effort when working collectively (Dixon-Woods et al., 2011, p. 189).

Clay-Williams and Colligan (2015) observed that “normal checklists are effective whenever there are advantages to standardizing performance, time is not critical, the series of tasks is too long to be committed to memory (or there are likely to be interruptions to execution of the task that might interfere with memory retrieval), and the environment enables a physical list to be accessed” (p. 428). Comparing the airline industry to health care, Clay-Williams and Colligan described “checklists developed in the airline industry to address emergency situations may contain boldface, non-boldface, or flowchart items” (p. 428). “Boldface elements would constitute for immediate action or the aircraft may be lost” (p. 428). Clay-Williams and Colligan (2015) identified that like the airline industry, in healthcare, procedures such as cardiac arrest resuscitation are commonly done in real-time without referring to a checklist. However, the team may require a “cognitive aid (a checklist of sorts) posted on emergency carts, tucked in pockets, or loaded on mobile device”, with a boldface prompt that can be effective when there is a critical sequence to be completed immediately, or the situation does not enable access to a list (Clay-Williams & Colligan, 2015, p. 428).

From an infection prevention perspective, Murphy et al. (2012) observed that neither surveillance systems nor an infection preventionist alone will reduce infections. Rather, patient care practices reduce infection and, together with technology aids for cognition (e.g., surveillance technology, electronic medical record alerts, etc.), facilitate the integration of promising practices within patient care teams (Murphy et al., 2012). Further, Slaughter et al. (2020) work suggested that high-frequency technical approaches for improving infection

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prevention practices could include reminders in identification lanyards, posters, pay notices, and official workplace email signatures.

Finally, Dixon-Woods et al. (2011) identified that setting up a dedicated trolley cart, as a technical approach and cognitive aid, had an expressive function by signalling “that logistical, operational, administrative, and financial resources had been mobilized to serve the needs of infection control” (p. 187). This aligned with the Chopra and Shonania, (2012) study which presented an “improvement model for central venous catheter (CVC) related bloodstream infections that featured 1) a checklist, or bundle, of evidence-based practices 2) education regarding these specific infection control practices 3) a catheter insertion cart 4) daily review and prompt removal of unwarranted CVCs and 5) empowerment of nurses to enforce adherence to these standards” (p. 93). This approach, which highlighted a checklist and a catheter insertion cart as a technical approach to a cognitive aid, found substantial reductions in infections (Chopra & Shonania, 2012).

The literature reviewed has some insightful conclusions that can be crystalized by Goldhaber-Fiebert and Howard (2013) who found teams that consulted a cognitive aid performed more of the critical actions, and did so more quickly, than a team that worked solely from memory. Cognitive aids provide a mechanism to assist the clinician through a crisis situation. The apparent benefits are the reduction of incidences of minimal recall as well as reduced fixation on the wrong problem. Checklists, a form of cognitive aid, enhanced the key elements of the implementation of evidence-based protocols within a thoughtful, organized, relevant and ritualistic process. In general, the literature has advanced cognitive aids as a mechanism to prevent infection and to integrate evidence-based practice protocols. Hence, the literature

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suggests that cognitive aids and checklists should be ingrained through the strategy of developing routines in LTC homes and congregate settings.

### **What is left unanswered and what is the impact on my research?**

The literature cited above provided little connection between cognitive aids being an enabler for best practices in LTC as compared to the acute care settings. Hence, if cognitive aids are a major benefit in acute care settings, to what degree, if any, has it been adopted in LTC practices? This perspective is relevant to my research work as the structured infusion of effective cognitive aids may help to save lives in LTC homes. Research efforts will need to examine evidence of the use of cognitive aids in the LTC setting and whether cognitive aids have had an impact on resident care results, especially as it relates to infection prevention. Table 12 illustrates the key attributes of the Cognitive Aids Critical Factor.

**Table 13**

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### *Key Attributes of the Cognitive Aids Critical Factor*

Critical Factor	Key Attributes
Cognitive Aids	<p>It is a reminder to act on important information</p> <p>Can be a warning, physical tool, mnemonic, reminder, or checklist</p> <p>Creates prompts to action</p> <p>Creates quicker retrieval of desired behaviours</p> <p>Prevents omissions</p> <p>Prevents skill decay</p> <p>Standardizes integrated performance</p> <p>Creates ritual</p>

However, the use of cognitive aids, though important, must be applied with rigour and as part of the normal operations of a LTC home. Cognitive aids need to be systematized and become a seamless part of operational routines. The next section continues this literature review with an exploration of organizational routines.

### ***Organizational Routines as a Critical Factor for Best Practice Implementation***

As infection prevention best practice protocols become codified in cognitive aids, the ultimate utility of cognitive aids can be served through their establishment in ongoing organizational routines. A good example of an organizational routine is the habit of a weekly communication huddle among team members. As a routine, the team huddle serves as both a reflection and a forecast of the organization's weekly operating status (Rowan et al., 2022 & Provost et al., 2015).

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### ***What are organizational routines?***

Peng et al. (2008) identified routines as organizational processes that use clusters of resources to achieve the desired outcomes and concomitantly involve a dynamic interaction of multiple knowledge sources while Becker (2004) referred to routines as collective recurrent activity patterns that involve multiple actors, have a mindlessness characteristic, are process orientated, can be context-dependent, and can be triggered by external cues or actor-related events. Levitt and March (1988) described routines as “forms, rules, procedures, conventions, strategies and technologies around which organizations are constructed and through which they operate” (p. 320). According to Feldman and Pentland (2003), routines are repetitive, recognizable patterns of interdependent actions carried out by multiple actors. Furthermore, organizational routines can consist of the actual performance of the routine by specific people, at specific times, in specific places – a concept known as agency (Feldman & Pentland, 2003). Finally, an organizational routine can be considered as a set of possible patterns that are enabled or constrained by a variety of organizational, social, physical, and cognitive structures from which members enact a particular performance (Petland & Rueter, 1994). In summary, organizational routines are observed as recurrent structural activities and processes constrained by the social patterns and habits of the workforce.

### ***Why is the concept of organizational routines important to explore?***

The literature reveals that routines have several unique characteristics that may impact the sustainability of best practices. Routines are “independent of the individual actors who execute them and are capable of surviving considerable turnover in individual actors” (Levitt & March, 1988, p. 320). This complements Peng et al.'s (2008) work, which suggested routines are more organization-specific, less transferable, and can be a source of competitive advantage.

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According to Cohen (1990), to build superior capability and an organizational memory, effective routines need to be developed to enable information and knowledge exchange amongst individual sources of knowledge. Cohen (1990) also observed that routines have the effect of control and coordination, a governance aspect, and an economizing of cognitive resources. Finally, routines help to reduce uncertainty, create stability, and have the characteristic of storing tacit knowledge (Cohen 1990). Hence, as an overarching characteristic, the establishment of organizational routines creates a structure for the implementation and execution of best practices. However, it is important to consider that organizational routines may also act *as a barrier* to best practice uptake.

### ***Key Perspectives from the Literature on Organizational Routines***

Several key issues or perspectives related to organizational routines are evident in the literature. Organizations learn by encoding past experiences into routines that ultimately guide behaviour. Routines are transmitted through socialization, education, imitation, professionalization, personnel movement, mergers, and acquisitions, and can evolve as a result of experience within a community of learning organizations (Levitt & March, 1988). Building on Levitt and March (1988), Cohen (1990) identified procedural memory as being more specific to the mode of communication from where it was initiated and experienced. This is important as a procedural skill learned in one mode of communication may not be available if triggering information is presented in another mode of communication. This observation suggested that an effective diffusion of new practices may be better achieved through the rotation of individual healthcare workers with other organizations in order to be exposed to relevant practical skills (Cohen, 1990).

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The crystallization of an organizational routine is important in best practice sustainability.

Variables in the uptake of routines, as identified by Petland and Rueter (1994), included: a lack of a single understanding, the understanding of changes across time and space, and acting in the context of others (which also moderates agency). According to Petland and Rueter (1994), the codification of an idea and the repeated performance of activities must take place before the sequence becomes an organizational routine. Of note, an organizational routine is energized by the subjective perceptions of participants (Petland & Rueter, 1994). Lastly, organizational routines create inertia and resist change until external forces overwhelm the structure and change occurs (Petland & Rueter, 1994).

Ajzen (2002) asserts that routinized behaviour is under the control of stimulus cues, hence, behaviour is guided by activated or spontaneous attitudes and intentions. Ajzen (2002) continued by observing that behaviour can be sustained in one of two ways: by conscious deliberation or by automatic reliance on well-established routines. However, the amount of conscious deliberation depends on the motivation and the cognitive capacity of an individual. As such, Ajzen (2002) observes when attitudes and intentions are ambivalent, the context is unstable and fails to provide a clear pathway to action. The lesson learned from Ajzen (2002), when creating a sustained, embedded intention for change, the development of added-value routines will often require the creation of a detailed plan that specifies when, where, and how a set of behaviours are enacted to overcome the effect of undesirable stimulus cues.

Contu and Willmott (2003) observed that learning practices are enabled and constrained by their embeddedness in relation to power, as learning is a factor situated within the everyday work practices. Contu and Willmott (2003) considered the impact of power concerning the social organization and the control over knowledge resources. The authors noted high social distances,

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and a concomitant worker's exercise of discretion, meant that their work behaviours could escape or defy direct management surveillance and regulation. Further, individuals may hoard information with feelings of insecurity in a position, a dynamic that has an impact on the spread and sustainability of value-added processes (Contu & Willmott, 2003). Hence, Contu and Willmott (2003) enlighten this research with insight into the impact of power relationships on the development of effective organizational routines.

In addition, the literature provided important rationale on the relevance of individualized focused attention to organizational routines development. One aspect is that of scripted behaviour. The concept of a schema or script observes that organizational routines are sustained by the cognitive structure of individual organizational members (Petland & Rueter, 1994). Petland and Rueter (1994) argued that scripted behaviours occur with: 1) the presence of an event schema, 2) categorizable stimulation cues, 3) the presence of action risks, 4) minimal required efforts, 5) the absence of unstructured subroutines, and 6) the observation of interruption and unmet specifications. Hence, attention to the individual capacity to enable the development of routines through cognitive structures appears relevant.

Evidence also emerged in the literature on the importance of routines. Peng et al. (2008) empirical analysis demonstrated "that routines associated with improvement and innovation capabilities indeed form distinct and internally consistent bundles, and these routine bundles are significantly related to operational performance" (p. 743). Agreeing with Becker 2004, Peng et al. (2008) identified that routines can be considered as the baseline building blocks or as organizational capabilities. Capabilities are built through consistent managerial choices in identifying, developing, and integrating routines (Peng et al., 2008). Peng et al. (2008) study

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found persistent efforts need to be made to identify and integrate routines that drive the intended capabilities and consistent patterns of decision-making.

According to Karnoe's (1995) work, social embeddedness focuses on the social constitution of the economic actor and refers to the routines that carry habitualization and institutionalized social practice. Karnoe (1995) found social embeddedness is shaped by social sources such as the education system, the financial system, state, or agency policies. The above foci shape the intellectual basis for selecting and solving problems as well as attitudes towards types of work (Karnoe, 1995). Hence, Karnoe's (1995) work draws attention to the social factors impacting organizational routines.

Organizational routines need to be learned. Pisano (1994) examined strategies for learning in corporations: essentially, the strategies of learning by doing and learning before doing. Pisano (1994) found where prior knowledge is weak, high-fidelity feedback is required alongside experimentation in the actual production environment (learn by doing). In contrast, where reliable theoretical models, modes, and heuristics exist; lab experiments, simulation, and other forms of learning before doing can be productive (Pisano, 1994). A basic premise supporting the concept of learning by doing is that only through actual production experience can an organization discover process problems that underscore a gap between virtual and potential performance. Where organizations have little knowledge and detailed experiences, planning may accomplish little (Pisano, 1995). Hence, a key takeaway from Pisano (1994) is an organization needs an experimental focus and attention to process to sustain and embed a new practice routine. *This takeaway aligns significantly with the concepts of implementation science.*

Karnoe (1995) also commented on skill development as culturally shaped and embedded in the search and the learning required for organizational routines and behaviour norms to

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develop. Organizations proceed with ambiguous processes that are often the product of inferential induction, analogy, problem framing, and from socially constructed norms and bodies of knowledge (Karnoe, 1995). Flynn et al. (2021) build on Karnoe's (1995) work by outlining four strategies critical to facilitating sustainability for evidence-based (EB) interventions or skills. The four are learning collaboratives, audit and feedback, informal leadership, and patient stories. The strategies produced the common mechanisms of sensemaking, understanding value, and the intervention's impact which, in turn, offered causal pathways for how the strategies achieve a desired outcome (Flynn et al., 2021). In Flynn et al. (2021), attention to the four strategies led to the continuation of the intervention and increased the likelihood of intervention sustainability through routines.

Finally, sustaining an optimized practice protocol into a routine eventually establishes the routine into the DNA of an organization as the qualities of the routine potentially can become part of the embedded culture or brand of the organization. Sadler et al. (2019) identified a stakeholder analysis process whereby stakeholders are brought together to codesign sustainable logic models. In the codesign process, stakeholders assess the effectiveness of an intervention and used driver diagrams to map out the key enablers (drivers) of the change ideas needed to improve the existing system and needed to optimize the effectiveness and the implementation of an intervention (Sadler et al., 2019). Through these processes, the embedding and sustaining of a desired practice in an organization is achieved (Sadler et al., 2019). In summary, the embedding activity, through the development of routines, helped to create the culture of the organization.

*What is left unanswered?*

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In my review of the literature on organizational routines, what is left unanswered? As stated, and repeated in previous sections, the literature lacks evidence of the impact of organizational routine development on best practice implementation in LTC homes. None of the authors directly attributed findings to the LTC sector. Therefore, questions continue to emerge regarding the context of LTC homes and the context's impact on routine development such as: does the educational background of LTC home front-line workers have an impact on routine development as well as can embedded routines actively become part of the DNA of nursing units as they proceed with the introduction and sustainability of best practices in infection prevention?

The concept of organizational routines impacts on my research as it is hypothesized that the development of organizational routines ultimately creates inertia, transmits information, and helps build a repertoire of infection prevention skills. As a functional tool, routine development may help to build organizational capabilities that are essential for LTC homes that are addressing severe infectious events. As identified in the literature, the embeddedness, and sustainability of an organizational routine are generated from several sources such as social forces, cognitive capacity, power dynamics, and culture. Clearly, the establishment of organizational routines comes with considerable effort, and it will be important to observe if successful LTC homes have evidence of this effort. Table 13 illustrates the key attributes of the Organizational Routines Critical Factor.

**Table 14**

*Key Attributes of the Organizational Routines Critical Factor*

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Critical Factor	Key Attributes
Organizational Routines	<ul style="list-style-type: none"><li>A repetitive recognizable pattern of interdependent action</li><li>Is independent of individual actors</li><li>Is organization specific</li><li>Has a governance aspect</li><li>Is constrained by social patterns and habits</li><li>Stores tacit knowledge</li><li>Embeds key activities</li></ul>

In the next section, this literature review examines the dimension of leadership.

Leadership is potentially the glue that holds the alignment toward best practice implementation together.

### ***Leadership as a Critical Factor of Best Practice Implementation***

Effective leadership, whether it be at a corporate level or a team level, may be the critical intentional force that increases the probability of an infection prevention approach's success in LTC homes (Kruse, 2013). Further, to deliver on the intent of improvement approaches, organizations will need to turn their attention to the ability of their leadership to deliver on effectiveness. Through influence, the creation of appropriate social and cognitive conditions, public and active commitment, and capitalizing on the strengths of a multidisciplinary team, effective leadership will become the glue that holds infection control approaches together and the force that sustains it through turbulent moments.

### **What is leadership?**

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Peter Drucker provided a simple and elegant definition. Drucker (2004) defines leadership as a process of social influence which maximizes other's efforts to achieve goals. Building on Drucker, Grove et al. (2020) described the concept of distributed leadership which contextualizes leadership as a more collective social process that emerges through the interaction of multiple actors. Grove et al. (2020) work suggested that poor relationships and conflict, as barriers, may potentially lead to poor implementation practices. The work identified leadership as a collective endeavour which cannot be separated from context, and which assists in overcoming workplace boundaries and barriers in order to achieve organizational goals.

### **Why is the theme of leadership important to examine?**

As Drucker (2004) described, effectiveness is a discipline that can be learned, and earned, and that an effective leader gets the right things done. Ortega et al. (2014) expressed that team leadership can create social and cognitive conditions that encourage, facilitate, and sustain an optimal level of team innovation as well as collective learning. The concept of change-orientated leadership becomes relevant for the team learning process as this form of leadership focuses on leading major innovative improvement as well as adaptation to external changes, and is interconnected with change management, coping, and adapting to turbulent environments (Ortega et al., 2014).

Finally, the work of Singer et al. (2015) found the importance of leadership support through a coaching perspective promoted psychological safety, expression of new ideas, and the development of a shared mental model between a leader and team member. Leadership is also important in increasing opportunities for learning by changing contextual factors such as resources, emphasizing a culture of respect, reducing barriers, and addressing cultural challenges (Singer et al., 2015). This aligned with the AHRQ (2016) which identified the most important

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driver to spreading and sustaining new safety practices and achieving a bold improvement goal is a public and active commitment of organization leadership.

### **What are the key issues or perspectives related to the topic of leadership?**

The literature identified several interesting perspectives. First, Javed et al. (2020) found leaders are required to establish a safe environment rather than a blaming environment to achieve high performance. Leaders need to develop competencies in employees that encourage them to think positively about errors as a part of organizational learning and innovation (Javed et al., 2020). Second, Pronovost (2011) suggested that leaders need to project an unwavering confidence that they will reach the objective, yet be humble enough to recognize that they seek the wisdom, skill, and passion of the group to achieve their goal. Third, Graen et al. (2020) explained that to instill the mediating conditions for improvement, followers must believe their leader is competent, trustworthy, and benevolent in working with them. Followers must believe their leaders reciprocate and believe the same about them. Once these reciprocal beliefs are established, the prescribed leader behaviour translates to follower performance (Graen et al., 2020). Fourth, Brewer et al. (2018) outlined the impact of a leadership program designed to build the capacity of healthcare practitioners to lead interprofessional education and interprofessional practice within their organization. According to Brewer et al. (2018), interprofessional practice, which involves two or more professionals, work as a team with a common purpose, commitment, and mutual practice. Best practice guidelines for interprofessional leadership included: content aligned with participants' pre-existing knowledge, experiential learning, regular feedback, diverse educational methods, and reflection on action (Brewer et al., 2018). Hence, attention to leadership development is essential to remove the current reliance on an individual champion to influence change in health education and practice (Brewer et al., 2018). Finally, Chreim et al.

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(2013) identified the need for leadership to overcome the concept of boundaries which have the impact of influencing professional practice in healthcare. Boundaries are described as physical, cognitive, structural, relational, hierarchical, knowledge, and task-based. Professional boundaries also exist as they interact in the performance of patient service tasks; therefore, by encouraging shared knowledge the leadership function helps to dissolve boundaries and may lead to integration, convergence, or enrichment of points of view (Chreim et al., 2013).

Considerable evidence emerged from the literature supporting the importance of leadership. Gaughan et al. (2020) work found three themes emerged as critical for leadership approaches to prevent healthcare-acquired infections (HAI). These themes included: 1) leadership activities such as providing resources to support infection prevention, engaging with frontline staff, maintaining visibility in units, and participating in a tiered huddle system. 2) meaningful rewards including positive feedback, celebration, positive recognition in a huddle and a tangible reward, and 3) goals derived by leaders were recognized at all levels, were often reiterated at staff meetings, and reinforced with usual reminders demonstrating progress (e.g., on bulletin boards). This aligns with the AHRQ (2016) finding that improvement results are enhanced through the leadership process by establishing a specific timeframe for goal achievement, continued communication about each safety goal's importance, and regular assessment of how well each goal is being met and sustained (AHRQ, 2016).

West et al. (2003) studied the contribution of leadership to the promotion of team innovation in multidisciplinary teams. According to West et al. (2003), innovation is defined as the “intention introduction and application with a job, the work team, or organization and which are designed to benefit the job, the work team, or the organization” (p. 394). The need for new and improved ways of working, treatment methods, and patient services can impact patient

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outcomes and patient quality of life (West et al., 2003). Further, the evidence identified that integrated group processes (clear objectives, high level of participation, commitment to excellence, and support for innovation) are factors for team innovation (West et al., 2003). Murphy et al. (2012) found that to achieve the desired infection prevention outcomes, the ability to influence, serve as a role model, demonstrate accountability and integrity, and communicate the value of infection prevention to a diverse audience are required leadership competencies for organizational success.

Lastly, McGilton et al. (2020) sought a common data element to measure supervisory effectiveness in LTC homes. The most influential factors, as to whether workers feel valued and respected, came from the relationship between workers with the supervisor. McGilton et al. (2020) results identified that LTC homes could improve their resident's quality of life by prioritizing and strengthening the relationship between the nurse supervisor and nursing personnel. For example, McGilton et al. (2020) observed a decrease in staff turnover rates resulting in improved quality of care delivery to residents. McGilton et al. (2020) findings compared with Poels et al. (2020) who studied leadership styles and leadership outcomes in LTC homes. The study confirmed that poor work organization, time pressure, high workload, staff shortage, and turnover are potential threats to quality of care and patient safety. The study implied that a passive-avoidant leadership style may negatively influence the resilience of staff.

Several key conclusions on leadership can be derived from the literature. First, leadership behaviours can influence the factors contributing to team innovation, particularly the clarifying of objectives and encouraging participation, as well as the commitment to quality and support for innovation (West et al., 2003). Second, by leaders including an initiative in the strategic plan, consulting expert opinion on effective interventions, linking patient stories to individual hospital-

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acquired infection (HAI) events, providing adequate resources for the change initiatives, monitoring HAI rates, and communicating progress to all staff and the board, the success of an initiative is enhanced (AHRQ, 2016). Third, according to McGilton et al. (2020), the most effective characteristics of a supervisor included: attentive listening, provision of credit, recognition, praise, encouragement of individual self-growth and receptiveness to staff remarks, concerns, and ideas.

### **What is left unanswered and why is this relevant from my research perspective?**

Although the interpersonal impact of leadership on improved performance is identified in the literature, a clear connection between the factor of leadership and best practice integration in LTC homes is not obvious or apparent. I would suggest that examining leadership as a key factor in best practice uptake for front-line workers is important to observe and codify. Finally, embedding a standard of care or a sustainable improvement protocol is not a spontaneous or ambiguous event. It requires intention, encouragement, perseverance, and accountability. Success is likely more probable with engaged leadership as leadership provides the glue to advance an improvement through a team of individuals. Table 14 illustrates the key attributes of the Leadership Critical Factor.

**Table 15**

*Key Attributes of the Leadership Critical Factor*

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Critical Factor	Key Attributes
Leadership	<p>A social influence that maximizes others' efforts to achieve a goal</p> <p>Projects unwavering confidence that the objective will be reached</p> <p>Encourages, facilitates, and sustains the innovation of the team</p> <p>Develops a shared mental model</p> <p>Overcomes boundaries, strengthens relationships</p> <p>Source of performance feedback</p>

### ***Quality Improvement Methods as a Critical Factor for Best Practice Implementation***

Total Quality Management and Continuous Improvement Tools are prevalent throughout the healthcare industry. Quality improvement tools appear as advantageous initiatives to help demonstrate why new actions need to be explored and implemented by the healthcare team. For example, a Kaizen event is an illustration of a multidisciplinary team-orientated quality improvement initiative used to better enable a key process, such as an online admission process for a particular low-risk elective surgery such as cataract surgery. This section leads to the question of whether quality improvement tools should be a prominent procedural consideration of implementation efforts to improve and sustain the long-term fidelity of best practice protocols.

### **What are quality improvement methods and initiatives?**

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Itri et al. (2017) wrote that quality improvement methods focus on “a well-defined problem, built in feedback on immediate outcomes to allow for the adjustment on a deep understanding of the mechanism of change involved in the intervention” (p. 253). According to Itri et al. (2017), quality improvement initiatives identify the components of an intervention and the underlying mechanism that will influence outcomes, while predicting how the intervention and its mechanism relate to and interact with each other. Further, Itri et al. (2017) described “qualitative research methods allow research to identify what matters to patients and health care provider, from the theoretical basis for why an intervention leads to an improvement, detect obstacles to changing performance, and explain why improvement interventions succeed or fail” (p. 254). Essentially, quality improvement methods provide the broad tools for a change management initiative.

To build on Itri et al. (2017), Langley et al. provided an excellent summary of the many quality improvement tools available to implement best practice initiatives and, notionally, the tools to support LTC homes' efforts to incorporate improvement into their work routines. The following (table 15) provides a sample of the leading tools for improvement activities.

**Table 16**

*An Overview of Tools for Quality Improvement*

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Tool	Primary Use
Flow diagrams or process diagrams	Used to develop a picture of a process as well as to communicate and standardize a process
Affinity diagrams	Used to organize, categorize, and summarize qualitative information
Force field analysis	A summary of factors supporting and hindering a change
Cause and Effect Diagrams	A collection and organization of current knowledge about potential causes of problems or variation
Driver Diagrams	A display of the theory of improvement in an improvement project
Matrix Diagrams	An arrangement of information to understand relationships to make decisions
Tree Diagram	A visualization of the structure of a problem, plan or opportunity
Radar Chart	An evaluation of alternatives or comparison against targets with three or more variables or characteristics
Run chart	A chart that studies variation in data over time and a chart that creates an understanding of a change in observed measures
Frequency plot	A chart that assists in understanding the location, spread, shape, and patterns of data
Pareto Chart	A chart that provides a focus on areas of improvement with the greatest impact
Control Chart	A chart to help distinguish between special and common cause variation
Scatter plot diagrams	A diagram that analyzes the associations or relationships between two variables.

Note. This table, modified from Langley et al, (2017), provides a snapshot of the leading tools available to support quality improvement initiatives.

From the above table, and from my experience in health care leadership, two tools are of particular interest to this dissertation due to the tool's ability to provide stakeholders with insight as to the 'why' of a need to adopt a best practice protocol within their workflows. These tools are 'cause and effect' diagrams and 'driver' diagrams. From my perspective, a thorough understanding of the 'why' of an initiative is critical for personal sensemaking and enabling a change management event. This is echoed by Bridges and Bridges (2016) who state, "People have to understand the logic of it before they will turn their minds to work on it" (p. 68).

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***Cause and Effect Diagrams.*** The cause and effect of the observed activity and subsequent outcome can help a work team determine the root cause for a phenomenon of interest. Cox and Sandberg (2018) wrote of the importance of modelling causal relationships in quality improvement. As identified by Cox and Sandberg (2018), fishbone diagrams are ideally used at the beginning of the project when there is a desire to identify causes worthy of further data collection. The establishment of causes provides a focus to a team's quality improvement effort.

Fifolt et al. (2019) supported the observation of Cox and Sandberg (2018) by examining experiential learning as an action strategy where stakeholders learn the implications of a cause and effect through experience and reflection. Fifolt et al. (2019) suggested that stakeholders have the opportunity, through experiential learning, to simulate an initiative and receive immediate feedback through a debrief about the experiences, recorded observations, and a discussion on lessons learned. Brydges et al. (2021) described a different form of experiential learning through a tabletop simulation methodology. This low-resource approach helped organizations and teams to understand everyday work and map how work is governed by policies with a goal of facilitating system change, managing social threats, and learning through cause-and-effect applications. Wang and Ji (2021) expanded on cause and effect learning through their discussion of instructional methods which included a simulated clinical environment, a virtual simulated clinical environment, virtual simulated equipment, team-based learning, problem-orientated learning, scenario work, role play, and the use of virtual or standardized patients. According to Wang and Ji (2021), stakeholder engagement took place along three dimensions:

1. *Reflective engagement* as a problem-orientated event with a focus on inducing active, persistent, and focused themes.

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2. *Performance engagement* as a role-based emotional and behavioural engagement which promoted empathetic experience, facilitated interprofessional practice, and encouraged strong decisive leaders.
3. *Interactive engagement* which included a mutually supportive peer interaction event and a collegiality that facilitated student interaction in a realistic simulated environment. Knowledge is constructed through interaction, cooperation, and reflection.

From a clinical perspective Tan et al. (2021) found simulation provided interaction among healthcare providers, reflective learning through the debriefing process, and by embedding authentic clinical scenarios that reflect the reality of practitioners. An important insight for this finding was provided by Wilson et al. (2005) whereby self-correction had taken place through providing, seeking, and accepting constructive feedback; cross-training for shared mental models; as well as an awareness of the potential for failure in a complex environment through identifying errors, identifying unsafe behaviours, providing constructive feedback, and correcting unsafe events.

Finally, from an infection prevention perspective, Jacobs and Garnett (2020) described how Hachensach Meridian Health developed a comprehensive plan or playbook to address COVID-19 infections. The playbook outlined future system actions across settings, facilities, and capacity management, as well as addressed infection control, safety, administration, human resources, clinical management, laboratory, pharmacy, patient experience, research, ethics, and supply chain aspects. The health organization provided just-in-time training, increased patient rounding, engaged in case discussion, as well as coaching to disseminate best practices through studying the effect of interventions (Jacobs & Garnett, 2020).

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**Driver Diagrams.** An insightful approach for common understanding and team-based subsequent action is the use of driver diagrams. Langley et al. (2009) observed that driver diagrams illustrated a team's current theories and hunches for improvement that can be tested and then enhanced. Driver diagrams provide evidence, knowledge and, in a detailed manner, lay out the descriptive theory of improved outcomes that can be tested or enhanced (essentially developing a predictive theory). Driver diagrams entail the outcomes desired, the key driver for the outcome, and the change concept (Langley et al., 2009).

Cox and Sandberg (2018) described that fishbone diagrams (or cause and effect diagrams) feed into driver diagrams which then take the causes, turn the causes into improvement aims, and provide a team with a roadmap of drivers (concepts that help accomplish or impact an aim) of interventions (how we will be able to accomplish the driver/ the necessary actions). According to Cox and Sandberg (2018), the root causes identified from the fishbones diagram can directly impact the identified driver or intervention in the key driver diagram. The driver diagram essentially becomes the collection of change theories that link the interventions to the initiative's aim (Cox & Sandberg, 2018).

Building on Cox and Sandberg (2018), Perla et al. (2011) examined large-scale improvement and the factors that stimulated positive and sustainable change across macro settings. Perla et al. (2011) findings were articulated as primary and secondary drivers. The four primary drivers observed were planning and infrastructure; individual, group, organizational and system factors; the process of change; and performance measures and evaluation. Perla et al. (2011) found the process of effecting a change driver was identified across three dimensions: the level to which the effort is actively compelled to create participation, the underlying change theory that drives the work, and the mechanism used to spread the intervention.

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As evidence, Issen et al. (2018) studied criteria for evaluating program theory diagrams in quality improvement initiatives. Through accurately defining hypothesized cause and effect relationships, researchers are then provided with comprehensive and prioritized lists of interventions, including opportunities to monitor implementation and effectiveness, as well as to understand and predict how interventions translate to other contexts (Issen et al., 2018).

According to the authors, the driver diagram initiative helped create a shared aim amongst stakeholders. Key features of driver diagram sessions included: the ability to help a group explore factors that needed to be addressed for a specific outcome, showing how factors are connected, acting as a communication tool, and providing for a measurement framework (Issen et al., 2018).

### **What is left unanswered?**

As described in the opening paragraph of this section, quality improvement methods and tools such as cause and effect diagrams and driver diagrams are powerful tools to help define a problem, help understand why new interventions are needed, and to help develop strategies and planned activities. Unfortunately, in reference to the above narrative, the literature identified above is silent on the infiltration and acceptance of QI methods in the LTC sector. Hence, through my research lens, I am curious as to whether quality improvement tools are prevalent in the long-term care sector and how they may be used in the sector. In terms of overall research, the use of these tools and methods may be implicit key procedural factors required in establishing best practice integration into frontline LTC home workers.

To conclude, as identified by Perla et al. (2011) work, approaches such as a macro driver diagram could be advanced across several long-term care homes in a network that is attempting to integrate a practice protocol. The insight that emerges from Perla et al. (2011) work could be a

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breakthrough for this sector. However, the use of tools such as QI requires a receptive audience and context. To this end, the next section addresses the final critical factor, that of creating cultural conditions for best practice implementation. Table 16 illustrates the key attributes of the Quality Improvement Critical Factor.

**Table 17**

*Key Attributes of the Quality Improvement Critical Factor*

Critical Factor	Key Attributes
Quality Improvement	<p>Identifies components of the intervention and underlying mechanics to influence the outcome</p> <p>Promotes experiential learning</p> <p>Identifies causality and mechanisms to accomplish the aim</p> <p>Assists with prioritization of interventions</p> <p>Creates a shared mental model</p> <p>Amplifies important communications and knowledge</p> <p>Establishes desired outcomes, key drivers for outcome, and change concepts</p>

### ***Creating Cultural Conditions as a Critical Factor for Best Practice Implementation***

The uptake and implementation of best practices in an organization such as LTC homes is a disciplined task requiring significant attention to detail and ultimately a formulation of a trust that an individual will perform the assigned activities thoroughly and comprehensively. To this end, the following section explores cultural conditions that an implementation initiative may consider as it transitions best practices into the behaviours of front-line workers.

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It is proposed that creating, enabling, and managing the optimized psychosocial conditions for change is an important aspect for organizations to consider as they mount efforts to integrate best practices into work routines through attention to culture. In some cases, this could be as simple as pictures or awards that symbolize and reinforce the organization's desired values. As a change management approach, creating optimized psychosocial conditions is an important consideration to help facilitate the internal dialogue and mindset of a front-line worker's awareness of, ability to make sense of, and ultimately accept their need to revise and evolve their roles in infection prevention practices. Hence, without an attitude, mindset, and culture that enables the acceptance of change, the transformation of individual behaviours will be difficult.

### **Why is attention to culture important?**

It is suggested that creating supportive cultural conditions is an important precursor or antecedent to an organization's change management efforts. Without an awareness by the leadership of this factor, key buy-in and subsequent efforts may be negatively affected as will resident outcomes. Routines, habits of thinking, mindset and the natural antibodies for change that emerge in work teams will be a headwind to the uptake of best practices. Thus, organizations will need to grasp the cultural aspect of change management to develop strategies and tactics to address the resistance that arises from antagonistic cultural conditions. The section commences with a consideration of a transition phase identified as the 'neutral zone' phase and the subsequent need to guide an organization through the neutral zone to establish the cultural conditions for the successful implementation of best practices.

### **Key Perspectives from the Literature on Cultural Conditions**

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To begin, Bridges and Bridges (2016) describe a concept labelled as the ‘neutral zone’ as a consideration in any change management scheme. The neutral zone is the phase an individual enters after letting go of the previous routines and activities and before achieving new routines and activities. It is a psychological state or transitional state between the previous reality and the new reality (Bridges & Bridges, 2016). As Bridges and Bridges (2016) describe, an organization cannot simply flip a switch to move from the old reality to the new reality, rather, the creation of a change management program is needed to guide individuals through the distinct stages of change labelled as *purpose, picture, plan, and part*.

Bridges and Bridges (2016) distinct stages of purpose, picture, plan, and part are described as follows. First, *clarity of purpose* is communicated through selling the problem of interest with evidence, identifying what will happen to stakeholders if there is no action, and a discernable explanation of how the problem and potential solution is grown out of an actual situation faced by the organization. Second, *a vision and a picture* must then be made available for the worker’s imagination describing how the outcome will look and how it will feel for stakeholders to participate in the solution. This stage has an impact of refocusing energies and creating new meaning for individual efforts. Third, *a transition plan* is created, which outlines steps at a more detailed and personal level, with the plan oriented toward the elements of the process and not solely on the outcome. Finally, Bridges and Bridges (2016) describe the *parts to play* wherein individuals understand their roles and relationships with one another as well as the individual’s specific role in dealing with the translation process. Together, these four stages give new insights, align people against the problem, create firsthand knowledge, serve participants’ self-interest, and have individuals be part of the outcome. As Bridges and Bridges (2016) conclude the above stages are integral in leading individuals through the neutral zone and help to

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embody new behaviours, attitudes, and attention to individuals' identities and previous experiences.

In separate work, Jongen et al. (2018) and Van Buijtenen and Foster (2019) generated an important understanding of the impact of workforce culture on healthcare outcomes. Van Buijtenen and Foster (2019) observed eight major themes from their literature review that resulted in a better culture with superior healthcare-acquired infection rates. These themes included fostering a safety culture, having a generative leadership style, embracing innovation, ensuring interventions fit the context, accepting a long-term outlook, engaging and empowering health professionals, promoting collaboration and communication, and seeing the benefits of a non-punitive climate. Van Buijtenen and Foster (2019) research observed the need for an initial assessment of the cultural aspects of a facility that sets the stage to establish opportunities to modify an intervention to fit a local context, resources, and existing culture. Jongen et al. (2018) complemented this work by studying health workforce cultural competence as an approach to improving health service quality for culturally and ethnically adverse groups. The authors studied cultural competency training and its effect on the knowledge, attitudes, skills, and behaviours of practitioners. The study found positive findings for practical knowledge, skills, attributes/beliefs through cultural competency training, though there was limited evidence of a positive impact on health care and health outcomes. Jongen et al. (2018) and Van Buijtenen and Foster (2019) works conclude the impact of internal and external cultural aspects is a consideration for the improvement of health outcomes.

Rock (2009) provided enlightening insight into micro-cultural drivers as barriers to individualized best practices uptake. Essentially, Rock explains the environment and the nature of relationships within an organization and team can be considered as an enabler, or a threat, to

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optimized team performance and the team's subsequent outcomes. According to Rock (2009), research had found that the neural responses that drive us away from threat responses are also triggered by the perception of the way individuals are treated by other people. The author suggests a threat response is observed as mentally taxing and can affect the productivity of an individual which consequently impairs analytical thinking, creative insight, and problem-solving. As a precondition for successful implementation, giving employees the latitude to make decisions, supporting the building of good relationships, and treating the whole organization fairly, produces favourable responses (Rock, 2009).

Rock (2009) suggests that five social qualities enable individuals to minimize the threat response and enable more productive responses. The five social qualities are status, certainty, autonomy, relatedness, and fairness (also known as SCARF). Rock advises that threat responses are generated: from an individual's assessment of social encounters that diminish the individual's status; from ambiguity or confusion; from the threat of the capacity of individual choice; from the threat of trust and empathy within a social group; and the feeling of an unfair exchange in an event or initiative. The SCARF model helps bring awareness to the challenging interactions, given individuals cannot think creatively, work well with others, or make informed decisions when undergoing a threat response (Rock, 2009). Therefore, organizations and their leaders need to understand the impact of social qualities and act in ways to mitigate socially driven threats so that team members can optimally perform their functions.

To overcome cultural challenges within a work environment, Bonawitz et al. (2020) identified a key element for optimizing implementation behaviours is the use of a champion. Bonawitz et al. (2020) identified six key attributes that emerged for identifying impactful champions including influence, ownership, physical presence at the point of change,

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persuasiveness, grit, and participant leadership styles. The attributes enabled champions to overcome institutional silos, build and leverage professional networks, create tension for change, cultivate a positive learning environment, optimize compatibility within existing workflow, and engage stakeholders (Bonawitz et al., 2020). The authors suggest that a champion's presence at the point of change makes the initiative visible and helps hold colleagues accountable for executing new workflows.

As an implicit objective for a change process, an organization or work team inherently seeks to create cultural conditions for reliability as it strives to uptake best practices. Frankel et al. (2017) defined reliability as “applying best evidence and minimizing non-patient specific variation with the goal of failure-free operation over time” (p. 9). According to Frankel et al. (2017), reliability will be generated by an individual’s actions as well as by the integrated activities of the individual team members. This observation complemented the Murphy et al. (2012) suggestion that the selection of “team members best able to help achieve desired outcomes is one of the most critical aspects of improvement work” and ultimately reliability (p. 302). Dixon-Woods et al., (2011) articulated that reliably preventing infections required “sustained, collective, and fastidious attention by all team members caring for the patient”, however, this requirement becomes weakened by the problem of “diffusion of responsibility” amongst those work-related roles not explicitly identified as infection control (p. 189). Dixon-Woods et al. identified two reasons for this observation: 1) individuals may feel that despite the effort to prevent infections, their efforts will be undermined by those failing to make the same commitment, and 2) hospitals are complex and dynamic organizations where there is difficulty determining individual responsibility or contributions. In summary, reliability is an important characteristic of an optimized psychosocial culture that generates effective change.

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### Why is the discussion on an enabling culture relevant?

Front-line workers in LTC homes will need to assimilate information quickly and break destructive behaviours and habits that suppress rapid change. An enabling, supportive culture is required to facilitate this desired state. However, the key issues to enabling a supportive culture include: Can LTC management identify and address culture as an enabler or barrier in their organizations? Can LTC employees' behaviours and attitudes be redirected for success within an organization's culture? Is a LTC home's culture and norms a primary factor in the organization's lack of success in containing infection? Does attitude to work, team culture and interpersonal relationships need to be a key component of a change management strategy to enable the uptake of best practices?

In conclusion, the aspect of culture and interpersonal relations favourably integrates into my research aim of understanding how attention to strategic implementation factors can improve infection prevention practices in front-line worker practice to create optimized resident outcomes. If cultural conditions are a key enabler, it is then important for an organization's leadership to consider and strategize the implications. Hence, the change management culture of an organization is an important factor to search for and observe in LTC homes. Ultimately, a research goal is to determine if a change management culture is part of the transformation process and does its absence have an impact on the negative outcomes observed in some LTC homes. Table 17 illustrates the key attributes of the Cultural Conditions Critical Factor.

**Table 18**

*Key Attributes of the Cultural Conditions Critical Factor*

Critical Factor	Key Attributes
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## EMBEDDING AIRBORNE INFECTION PREVENTION BEST PRACTICES IN LONG-TERM CARE HOMES: AN IMPLEMENTATION BLUEPRINT

Cultural Conditions	<p>Important antecedent to change management success</p> <p>Attention to a fit with local context and resources</p> <p>Facilitates the neutral zone transition</p> <p>An attention to addressing barriers experienced through microculture encounters</p> <p>Facilitates reliability</p> <p>Optimizes psychosocial conditions</p>
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### Discussion

At this point, it is of value to take stock of what has been examined and make connections with the critical implementation factors examined in the above sections of this chapter. At the outset, the research question (**How are evidence-informed infection prevention best practices for transmissible airborne diseases prospectively implemented by leadership into frontline LTC home workers' practices?**) is in essence a question of how an improvement initiative, when guided with evidence-informed advice, is then designed, managed, and integrated as change objectives that are manifested through new individualized worker behaviours.

Therefore, to address the above research question, I studied three theoretical lenses and approaches that guided the understanding of my research phenomenon: organizational learning theory, normalized practice theory and implementation science approaches. In brief, organizational learning theory provided strong insights into organizational knowledge acquisition and dissemination. Normalized practice theory provided insights into the mechanisms that embedded knowledge into a social context. Implementation science approaches gave

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insights into the factors that integrate evidence-based findings into clinical settings. Together, these theories and approaches create an increased understanding of how an organization can manage a change process in order to consistently generate a new desired behaviour at the individual practice level.

I continued by examining the critical implementation factors as a linear and cyclical developmental process to help shape the mechanisms of implementation into manageable components. This work was complemented by observations from the hand hygiene literature and the examination of infection prevention implementation barriers. The synthesis of the above led to clues into normative dimensions that assisted in creating a conceptual framework that act as pillars for setting a strategy for the implementation of best practices.

The above is framed by observations of the literature's key learnings from work on infection prevention handwashing as well as infection prevention implementation barriers. This literature provided clues into normative dimensions that assist in creating a conceptual framework for strategies that facilitate the desired outcome of integrating infection prevention evidence into front-line workers' practice. These normative dimensions can be described as interpersonal, structural, and procedural. Within each of these dimensions are the critical implementation factors for an improvement initiative to consider when designing a plan of action (Table 18).

**Table 19**

*Normative Change Management Dimensions with Associated Critical Factors*

Interpersonal Normative Dimension	Structural Normative Dimension	Procedural Normative Dimension
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Characterized as social and relationship-orientated traits	Characterized as formation, functional, and architectural traits	Characterized as process-driven, action basis, and stepwise
<p><b>Critical Implementation Factors:</b></p> <ul style="list-style-type: none"> <li>• Patient Experience</li> <li>• Psychological Safety</li> <li>• Leadership</li> <li>• Culture</li> </ul>	<p><b>Critical Implementation Factors:</b></p> <ul style="list-style-type: none"> <li>• Collective Learning</li> <li>• Individual Learning</li> <li>• Cognitive Aids</li> <li>• Organizational Routines</li> </ul>	<p><b>Critical Implementation Factors:</b></p> <ul style="list-style-type: none"> <li>• Measurement and Transparency</li> <li>• Quality Activities</li> <li>• Team Competency Development</li> </ul>

*Note.* This table describes the three normative dimensions of interpersonal, structural, and procedural dimensions. The critical implementation factors for managing change are observed to align within each of these three normative dimensions.

To briefly summarize the insights from the research on implementation factors, the literature conveys the following key conclusions for each of the identified eleven critical implementation factors. 1) The resident's experience is determined as having a positive influence on practice behaviours, the mitigation of potential resident risk, and the dignity of the resident. 2) Measurement, and the transparency that accompanies measurement, help to establish a baseline and is a precursor to accountability in an implementation initiative. This factor assists in creating a high error management culture which is a driver for improvement, a framework for learning, and leads to codifying successful and unsuccessful improvement opportunities. 3) Individual competency development enables an individual's influence toward achieving organizational goals as well as enables the effective diffusion of best practices in the work environment. 4) Collective learning appears as a distinct process for gaining greater knowledge, the baseline preparation for activity alignment, and a cognitive connection among team members to create and implement shared priorities. 5) Team competency development builds on collective learning as an enhanced focus linked to the effectiveness of team members to achieve a group objective - given no one can achieve an outcome alone in an environment of complexity. 6) Psychological safety emerges as a principal factor for creating and motivating the best possible results from

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team members through an undertaking of interpersonal risks, creating adaptive behaviours, as well as reinforcing persistence through the open sharing of information, insights, and resources.

7) Cognitive aids have the utility of helping to deploy knowledge while a task is performed. In addition, cognitive aids prevent the decay of skills, enable the quick retrieval of skills, prevent omissions during a stressful situation by institutionalizing good practices, and ensure the performance of critical activities. 8) Organizational routines help to drive interdisciplinary action in a process-driven and context-dependent situation that is independent of individual action, acts as a governance factor, stores tacit knowledge and past experiences, enables sensemaking, and promotes an understanding of value as well as the impact of an intervention. 9) Leadership as a factor acts as a catalyst to maximize a social network to achieve superior goals through a coaching perspective (which promotes psychological safety), the expression of innovative ideas, the development of a shared mindset, and a projection of confidence that enables a team to reach their objectives through the wisdom of the group. 10) Quality improvement tools provide numerous functions to help address the elements of a contextual situation and, through quality tools such as *cause and effect diagrams* and *driver diagrams*, provide guidance and an understanding of mechanisms to team members on how enabling factors are connected to an outcome. 11) Attention to culture provides an insight into the nature of relationships, interpersonal transactions, and attention to the relationship components that enable the execution of a new routine and action.

Furthermore, as I consider the above eleven factors separately and as a group, I observed that resident experience, psychological safety, leadership, and cultural elements align as factors across the *interpersonal normative dimension*. Collective learning, individual learning, cognitive aids, and organizational routines align as factors across the *structural normative dimension*.

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Measurement, quality, and team learning align as factors across the *procedural normative dimension*. Hence, each of these dimensions and component factors are considerations for an initiative to examine when seeking to understand the cause and effect of a targeted phenomenon and then turning the applicable factors into drivers of attention when spreading evidence-informed interventions.

Further, I believe that in a clinical change management context, these eleven factors have varying influences on the creation and sustainability of best practices. Each of these factors must be considered by an organization as the organization strives to create better health outcomes, especially in an emerging infection-related crisis circumstance. Further, an organization may need to consider these factors in the planning process for the implementation of best practices initiatives and as a diagnostic while executing a change. Primary research may also reveal that a subset of these factors has greater influence in an LTC home context and may require greater attention in the change management planning process.

I also note the literature provides minimal understanding of why a proportion of LTC homes successfully integrated infection prevention best practices while others were unsuccessful. Of the articles researched, less than ten percent described research linked to LTC home settings. Thirty-seven percent were linked to acute care, twenty-three percent were linked to general health care management, fourteen percent were linked to health networks or academic science centres and thirteen percent were aligned with general management and industry.

Further, the evidence from the literature did not address how LTC homes can strategically approach best practice implementation. In addition, the literature did not provide a clear summary of essential factors that are required in an implementation process for LTC homes seeking to insert best practices into their front-line worker's behaviours. This is important as a

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major project that relies on behaviour change requires planning dimensions or factors to anchor detailed planning activities.

To conclude this chapter, and to pull the above findings into a concise narrative, as a LTC organization strives for optimized health outcomes through improved infection prevention practice implementation, the due diligence planning for a multidisciplinary initiative requires an evaluation and attention to the identified critical factors and then conscious attention to applying the factors to the kickoff and management of a change effort. Going forward, if an implementation initiative is not working, management could reflect and analyze its initiative against the eleven critical factors and then create revised actions to relentlessly pursue the desired optimized resident outcomes. The need for reflection on the fidelity of a planned process, the analysis of the process's effectiveness, and the subsequent adaptation of the process may be the overarching gap in organizational approaches to infection prevention uptake revealed by the literature. Unfortunately, the discipline of evaluation and progress against a change management plan may appear as an academic exercise rather than as a critical activity for non-academic organizations such as LTC homes.

In closing, the evidence gathered from the literature provides a measure of the materiality of the significance of the eleven critical implementation factors and their use in an implementation science approach. Unfortunately, what is missing is evidence of the impact of these critical factors or other factors on the LTC home practice environment. It follows that these observations provide a backdrop for my research initiative and the methodology that is presented next.

## Chapter Four: Methodology

### Introduction to Methodology Approach

This chapter describes the methodology and approach I used for data collection, analysis, and synthesis in conducting my research initiative. In brief, I was interested in observing from research participants the mechanisms or critical factors that explain how certain LTC homes were successful in implementing best-practice infection prevention guidelines with their frontline workforce, while others were unsuccessful. Further, a core premise of my research is capturing the mechanisms or critical factors for implementation, bringing value to healthcare practitioners, the LTC sector, and the resident population, by providing insights into the key elements of the change management strategy required to improve practice behaviour. Developing an awareness of the mechanisms or critical factors for practice improvement helps generate the steps of a roadmap for leaders to follow when developing techniques for implementing infection prevention initiatives.

### Background

As background, LTC homes are complex social structures that deliver care to the elderly. LTC home residents are vulnerable to infection and other comorbidities. Therefore, to combat significant future infectious events, I postulate that LTC homes require a strategic and systematic change management approach to drive the advances and best practices necessary for optimized health outcomes. Further, I suggest that change management is akin to a quality improvement project, as the initiatives are “focused on a well-defined problem, are oriented toward a focused aim, and are highly practical and often, though not exclusively, local in character” (Portela et al., 2015, p. 326). As Portela et al. (2015) described, quality improvement projects utilize process

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improvement techniques such as project plans and conceptual roadmaps to identify what works in a local context. Hence, project plans and roadmaps need to be based on awareness of the critical factors to enable the leverage of effective implementation and execution.

Developing a project plan and conceptual roadmap for improved execution can be facilitated through qualitative research and interviews. Marshall et al. (2022) and Northey et al. (2012) described that qualitative research utilizes interviews to explore and explain the participants' perspective, meaning and feelings toward an event. Marshall et al. (2022) added that interviews provide opportunities for immediate follow-up and clarification, while Northey et al. (2012) advised that the rapport provided through an interview assists in a participant speaking openly, thus creating more knowledge. Similarly, Dunwoodie et al. (2022) suggested that interviews help uncover the attitudes germane in the workplace experience and provide a holistic description of an event that is advantageous when limited empirical evidence is available. Jamshed (2014) added that interviews help extrapolate the thought process, while Ryan and Bernard (2003) suggested interviews help uncover the issues evident in a phenomenon. Therefore, qualitative approaches that use interviews can help satisfy the how of the improvement process.

Another concept that supports change management, process evaluation, explores the components of interventions, as well as the fidelity, uniformity, and the mechanisms associated with an intervention (Portela et al., 2015). According to Portela et al. (2015), qualitative methods capture the extent of the interventions, as well as the fidelity of the intervention and the mechanism involved in the change. Qualitative methods help to distinguish empirical fact from normative judgment (Portela et al., 2015) and assist in the creation of concepts and theories through inductive exploration (Sandberg & Alvesson, 2011). Thus, systematically incorporating

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an approach, such as implementation science, and a qualitative research method through instruments such as interviews and process evaluation, allows for a better exploration of the mechanisms of change involved (Portela et al., 2015). These mechanisms of change can form the basis for effective process evaluation and process redesign.

How does the above narrative relate to my research aims and the methodology that I implemented in this study? Recall, my primary research question is: ***How are evidence-informed infection prevention best practices for transmissible airborne diseases prospectively implemented by leadership into frontline LTC home workers' practices?*** Or, said in another way: ***How do LTC leaders and their organizations help frontline workers use evidence-based practices to prevent the spread of airborne infections?*** Following my reflections on the insights from the literature, the above primary research question is supplemented and crystallized through consideration of the following secondary research questions that strive to illuminate the critical factors experienced by LTC research participants:

- 1) ***What overarching change strategies are rural LTC home facilities using to introduce evidence-informed infection prevention best practices?***
- 2) ***How do the leaders of rural long-term care homes individually facilitate the translation of best practices into LTC home workers' behaviours?***
- 3) ***What mechanisms or tools facilitate establishing best practices in the rural LTC home workforce?***
- 4) ***How do the leaders of rural long-term care homes standardize best practices in infection prevention?***

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### *5) How do the leaders of rural long-term care homes sustain best practices in infection prevention?*

As identified in the above narrative, the qualitative methodology is chosen to best deliver responses to the ‘how questions’ that underlie my research questions and motivate my research interest. The “how” questions are framed as an attempt to identify the mechanisms of change and the critical factors implicit in change. Given that qualitative methodology delves into the elements of a process, or behaviour, that explain a phenomenon or the examination of variables within a social context, the methodology is ideal for identifying mechanisms of change or critical factors (Adu, 2016; Creswell, 2012). The qualitative methodology also helps to provide clues regarding any potential normative groupings of implementation approaches into a more functional, conceptual framework for future research or analysis opportunities.

In the following paragraphs, I describe to the reader the factors that shaped my research approach, my epistemological and philosophical position, assumptions, biases, ethical considerations, and the data collection process, which led to the thematic analysis approach I had undertaken. I continue this chapter with the semi-structured interview questions that I utilized. I then closed this chapter with the change in recruitment strategy that I implemented to achieve the targeted interviews that generated the findings for this study.

### **Factors That Shaped My Research Approach**

Several factors influenced my research approach and my orientation toward the qualitative methodology. First, as a former Chief Executive Officer of a regional health authority, I was accountable to the Ministry of Health and my board of directors for the funding and quality of care generated by the thirty-eight LTC homes in my district. Second, during the SARS epidemic, various respiratory influenza events, and most recently the COVID-19

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pandemic, I was surprised and astonished by the variation of outcomes, implementation attempts, and the general ineffectiveness of the LTC homes in tackling infectious events related to airborne pathogens. Third, despite significant infection prevention resources available to each LTC home in my region, I observed a troubling lack of consistent strategies and processes utilized to implement best practices that mitigate airborne infections. Hence, I remained curious to know how and why this may have happened, but, more importantly, what lessons were learned that can inform the future of best practice implementation.

Further, at a higher level, I am motivated to understand the socio-adaptive and normative factors contributing to new behaviour internalization and how the LTC homes' leaders can, in future, successfully incorporate those socio-adaptive and normative factors into their change management initiatives. Thus, my research approach had the intention of understanding how LTC home organizations, with particular attention to the organization's functional leaders, facilitated the front-line workers' internalization of airborne infection prevention best practices into their daily routines. Therefore, using the theoretical lens of Normalization Process Theory and the Implementation Science approach, the qualitative research methodology that I proposed was well-placed to assist with observing, evaluating, and developing insights through the perceptions of LTC leaders for my phenomenon of interest.

### **Epistemological and Philosophical Position Shaping the Research Design**

This research work was motivated by my desire to generate observations and responses from nursing home unit leaders that described, as critical factors, how they and their organizations approached the implementation and sustainability of best practice evidence-informed infection prevention guidelines for their workforce. Therefore, this research was

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driven from an inductive perspective, guided by a qualitative ethos that is interpretivist and subjectivist in orientation.

A qualitative ethos was pertinent in this work as respondents were asked to discuss and describe their perspectives, experiences, and actions. At the same time, as a researcher, I sought to interpret and thematically organize these personal accounts (Wilson, 2014). I aimed to assess the respondents' experiences, leading to a better understanding of what collective drivers or critical factors influenced their decisions and actions. Aligned with this aim, as a researcher interested in the culture that influences decisions and actions, and the knowledge constructed through experience, my epistemology position was best described as an interpretivist orientation, and I engaged in research through interaction with selected healthcare leaders as social actors as they recounted their experience within their workplace settings (Lincoln et al., 2011; Wilson, 2014). Finally, my research approach was inductive, given that I took respondents' results from an observational perspective to a thematic perspective (Braun & Clark, 2016; Campbell et al., 2021; Wilson, 2014).

In terms of my ontology (the nature of reality or the way I think the world is) the subjectivist view was predominant. From my perspective, the perception, as well as the actions of the social actors that I interviewed ultimately created the social phenomenon of interest central to my research (Cotrell, 2014; Wilson, 2014). Hence, from this subjectivist perspective, the beliefs, competencies, and attitudes motivating the responses received from respondents, and the description of the respondents' efforts to create a desired change, was of key importance.

Finally, the results of this research are also expressed as exploratory research, given there was a paucity of work to reference when explaining my specific research phenomenon, and no obvious observed empirical research related to the process of implementation of airborne

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infection prevention best practices in LTC homes. Hence, to create insight, this work used thematic analysis as a mechanism to elaborate and conceptualize people's knowledge or experiences (Braun & Clark, 2016; Wilson, 2014). To this end, the goal of this research study was to assess individual perspectives and then, ultimately, develop themes as critical factors and conceptual models to ultimately enable a desired process, behaviour, or outcome to be achieved in LTC home contexts.

In conclusion, through my epistemological and philosophical orientation, the study of LTC homes, LTC home participants, and the participants' tactical strategies was intended to help address 'the how' of my research question. By observing insights into the socio-adaptive factors and normative processes the participants relied upon to achieve practice compliance, a rich sample of thematic data would be generated that gives valuable context to the research phenomenon. Ultimately, I expected the findings from the thematic analysis process would lead to a conceptual systemic model that would inform the LTC sector for future best practices implementation initiatives.

### **Assumptions**

As I embarked on this research, the following three major assumptions were identified as a starting point for my research. First, I assumed the LTC homes targeted in my dissertation had access to a variety of infection prevention protocols, processes, and education tools from previous experiences with flu outbreaks, gastrointestinal outbreaks, and COVID-19 outbreaks. I assumed these resources should be readily available and relatively easy for the study participants to access.

Second, I assumed municipally owned LTC homes would receive additional guidance and capability from the corporate infection prevention resources available to the LTC homes

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from upper-tier governments. In comparison, for-profit LTC homes would inevitably have had access to implementation guidance from their centralized corporate resources.

Third, from a macro perspective, the LTC homes subject to my research were assumed to be aligned with the local public health units. On an ongoing basis, public health units would receive official evidence-based advice and guidance documents from the Office of the Medical Officer of Health for the Province of Ontario. Given that the LTC homes in my study would receive the same source documentation from the Province of Ontario, this research provided a unique opportunity to understand the different approaches used by each LTC home and their unit leaders in transforming a single predominant source of evidence, advice, and guidance into their work team's infection prevention activities.

Several secondary assumptions were also identified and presumably may have had an impact on my research findings. I presumed there would be a wide range of experienced leadership amongst the targeted respondents. I also presumed there would be a potential rural influence or impact on the characteristics of the resident population that influence inherent care processes (e.g. chronic pulmonary illnesses related to the agriculture industry). The rural influence may also manifest itself in the operations of the LTC home, given that the home may be more community-oriented and may be influenced by an inherent familiarity between the people, residents and the local culture that would be evident in the behaviours of the workers and residents. I assumed there would be certain procedural differences between the homes based on the age and the aesthetics of the physical structure. I also expected that several situational factors may have influenced the responses to my research work including factors such as the impact of the ownership style of the organization, the executive leadership style of the LTC home, the scope of responsibilities of the leaders, the perceptions of the unit leaders of their subordinates,

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previous roles within the organization of the surveyed leaders, and the ancillary personnel resources available to the home (e.g., physiotherapists and respiratory therapists).

I postulated that the organization or model of care within the LTC homes, the general physiologic characteristics of the LTC home population, the adherence to provincial LTC standards, their accreditation status, and the adherence to policies that govern the LTC industry in Ontario would be similar. Finally, I assumed the operational issues and opportunities facing these LTC homes should be similar to those of LTC homes elsewhere in Ontario.

### Biases

As I originally reflected upon the creation of this methodology section, I became aware of several unconscious biases that, if ignored, may potentially affect my research outcomes. First, having personal experience in the Ontario LTC sector from an oversight role, I believed that rural LTC homes have a limited capacity to implement best practices systematically. This belief was reinforced by my observations of limited operating resources available to rural LTC homes, as well as a leadership team function that is geographically isolated from other available resources. I believed that limited access to resources leads to an accompanying lack of capacity for educational opportunities that presumably impact competency development.

Second, I believed privately owned LTC homes focus less on education and competency development due to their emphasis on keeping operating costs low and simultaneously generating maximal shareholder value. I believed a focus on profit harmed the transfer of best practices to front-line workers, and this may be evident in my interpretation of the participants' responses.

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Third, given that municipal-owned LTC homes are unionized, I predicted that a greater emphasis on staff safety and greater protocol adherence would be observed at these LTC homes. I believed that this emphasis is due to historic union-management adversarial relationships that emerge from such an environment, and a lasting impact of these adversarial relationships has an impact on work-related processes and initiatives.

Finally, I expected LTC homes to be much less detail-oriented and less systematic in their approaches to infection prevention compared to acute care centres. As such, I expected LTC home's infection prevention approaches would be more reactionary than proactive.

In conclusion, it was important that I remained aware of the above biases and consciously mitigated their impact as I listened, recorded, and developed themes from my research interactions. My strategy for mitigating my biases was to act in a detailed and neutral-oriented mindset as I questioned and integrated the collected information into my data files. I planned to use reminders and checklists to keep myself consciously aware of my biases as I generated themes or concepts. In short, I planned to focus my attention on the development of themes based on the evidence found within the data rather than my inherent perceptions.

### **Data Collection, Analysis within the Thematic Analysis approach.**

#### ***Thematic Analysis Process***

Once the notes and transcripts' narrative from the interview had been fully developed, the following six stages of reflection and analysis were undertaken per Adu (2019), Brown and Clarke (2006) and Naeem et al. (2023).

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**Phase One: Familiarization with the Data.** As a researcher, I immersed myself in the whole of the transcribed data and carefully reviewed the narrative to comprehensively understand the message and the meaning behind the interviewee's response.

**Phase Two: Generate Initial Codes.** Following familiarization, I began to generate interpretive codes in my subsequent readings. I relied on the Microsoft Office applications and the NVivo application to enable this work within the text of the transcribed narrative.

**Phase Three: Generate Themes.** In this phase, I aggregated the meaning of the codes generated in phase two and began the process of collapsing multiple codes into broad concepts and themes. Each code summarized a concept or salient phrase.

**Phase Four: Review Potential Themes.** In this phase, I continued to look for further connections and the possibility of combining themes or generating subthemes to complement major themes. Patterns that give a conceptual framework for meaning and potential future behaviours emerged.

**Phase Five: Defining and Naming Themes.** As the subthemes and themes were refined and aggregated into consolidated factors, they began to describe 'the how' of the phenomenon as described by the respondents' experience.

**Phase Six: Develop a Conceptual Model.** Once the themes are identified, a conceptual model was developed to better answer the research questions and underscore the research work's contribution to the extant knowledge (Naeem et al., 2023)

## Preliminary Research Recruitment Results

### *Initial Recruitment Efforts*

Following my research proposal (to contact four to six LTC homes), I began by reaching out to the municipal homes in Lambton County, which are a collection of LTC homes governed

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by the County of Lambton. Through the Chief Operating Officer of the County of Lambton, I was connected with the administrator of the LTC homes division, who, by e-mail, then connected me to the directors and infection prevention leads of three Lambton County municipal LTC homes. Using this opportunity, I sent individual introductory emails, with background appendices, to the list of leaders provided to me by the administration of the LTC homes. My cover e-mail gave a brief discussion of my project in order that the e-mail recipients would recognize that I was a legitimate sender and not a cyber threat. As a result of this effort, I immediately received responses from several individuals who expressed interest in assisting with my study.

The first five individuals that I interviewed came in rapid succession. With the Christmas break fast approaching, and a limited window for interviews, all five early participants were notionally treated as a pilot. My interviewing skills were strengthened with each interview as I became more confident in my diction and in the use of the Microsoft Teams technology. I found that my open-ended questions worked well. No changes to my questions were required; rather, just the emphasis of certain words for clarity purposes (e.g., emphasis on ‘from your perspective as a leader’).

As part of the research routine that I created, at least 24 hours before each interview, I resent the interview questions and the consent form to the participants. I indicated to each participant that they could withdraw at any time and that I would provide the participants with a copy of the transcript for their review and approval.

Upon completion of each interview, I wrote a preliminary analytical memo that described my insights and my suggestions for personal improvement in delivery for the next interview (See Table 19 for an example of an analytical memo). A practice that I began with the first interview

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was to manually record “jottings”, or ‘dynamic field notes’, as the individual was speaking. I found this physical writing process focused my intention on the words articulated by the participant, which helped to enhance my focus and draw my attention away from projecting any biases on the interview. The action of taking dynamic field notes also provided an extra level of validity as I was examining the evidence provided from the participants, both in real time and then retrospectively through my review process. I continued this process throughout the subsequent interviews. An excerpt of my dynamic field notes is displayed in Table 20.

**Table 20**

*Analytical Memo Example*

<b>DDBA 0004</b>	
Impression	<ul style="list-style-type: none"><li>• Thoughtful responses</li><li>• The participant took time to answer</li><li>• The participant seemed quite poised in responses</li><li>• The participant is still somewhat new to the role but is interested in being innovative</li><li>• Well prepared for interview</li></ul>
Insights	<ul style="list-style-type: none"><li>• Spoke of the power of attitudes</li><li>• Spoke of open communication and being non-judgemental</li><li>• Spoke of teach-back method (a great insight)</li><li>• Spoke of importance of formal courses</li></ul>
Takeaways	<ul style="list-style-type: none"><li>• Beginning to see the power of e-learning and videos</li><li>• Also dedicated time blocked off to undertake initiatives</li><li>• Need for regular sessions important</li><li>• Personal improvement opportunities</li><li>• Slow down my dictation of the question</li><li>• Allow more pause time, no need to hurry to next question, give participant the opportunity to add to responses</li></ul>

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**Table 21**

*Partial Dynamic Field Notes Example*

<b>DDBA 0004</b>
Research Question One - Points
<ul style="list-style-type: none"><li>• Surge Learning Modules used</li><li>• Policies reviewed from OHT/PHO</li><li>• Utilized IPAC training through Public Health</li><li>• Dedicated Time and Scheduling is Important</li><li>• Use of Signage</li><li>• Use of Emails</li></ul>
Research Question Two - Points
<ul style="list-style-type: none"><li>• Open conversation is important</li><li>• Transparency is critical</li><li>• PHU audits, ensure non-punitive/non-judgmental</li><li>• Newsletter use</li><li>• Tips sheets</li></ul>

Overall, to briefly summarize my experience with the pilot interviews, the interviews assisted me with the flow of my introduction and with the correct emphasis of certain words and phrases in my question delivery. As the sole modification to my research questions, I bolded certain words in my version of the questions to make sure I consistently emphasized parts of the questions appropriately in order to enhance the data received from participant responses. The results that were generated from the first five interviews were from infection prevention and control (IPAC) leads, LTC home managers, as well as a manager who was an infection prevention lead in their recent past. Given the quality of the responses, the participant's effort to answer the questions comprehensively, and the significant interest of the participants in improving infection prevention research, the narratives and findings were folded into the coding of my total study.

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### ***Logistics and Technical Considerations***

To maintain research integrity and to be consistent with my intended methodological process, invitation emails were always sent through a secure internet site and were ultimately provided through my Athabasca University e-mail account. The Microsoft Teams function, through the Athabasca University Microsoft Office Suites, was used to administer the virtual interview. Once the interview was completed, Microsoft Teams quickly created a transcript that was sent immediately to the participant for comments or any validation concerns that they may have. All participants had verified the accuracy of the transcripts and consented to their use.

The Microsoft Teams transcript was immediately recopied, participant names replaced with a unique identifier, the file was renamed with a code to maintain confidentiality and saved to a secure password-protected USB drive. In my private project journal, I kept a record of the name attributed to the code and the participant for future cross-referencing purposes. The original Microsoft Teams transcript was deleted. It is important to note that the transcription process of Microsoft Teams was not precise. For example, the Microsoft Teams function would record and transcribe the phrase 'IPAD lead' instead of 'IPAC lead' from the conversations. Each Microsoft Teams transcript was reviewed for accuracy. When transcripts did not appear to accurately capture the interview, the audio was re-reviewed, and the transcript was modified to be an accurate recording of the interview.

Due to the busy workload of LTC managers and IPAC leads that were made available to me for this study, and because of the emerging outbreaks occurring in the local LTC homes, it became clear that all interviews would be conducted through Microsoft Teams rather than in person. This decision did not appear problematic and actually gave me improved access to participants. Of note, the camera function was engaged in 19 out of 20 interviews, which helped

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me view the body language/facial expressions to ascertain the context of the response. With the above research process established, I followed the above routines and interactive steps for the remainder of my interviews.

### ***Ongoing Participant Recruitment Activities***

With the completion of the first five interviews, I continued my recruitment of LTC home participants. I continued generating e-mail invitations with the names provided to me by the administrator of the municipal LTC homes in Lambton County. Of the names provided, my capture rate was approximately 50%. I then continued my plan of contacting other homes in Lambton County and Middlesex County. I began to experience difficulty in contacting prospective participants for a variety of reasons including 1) the website of the various LTC homes were out of date or did not provide a clear e-mail address for key individuals, 2) prospective participants were no longer with the organization, 3) participants were unavailable for personal reasons, 4) the executive directors of the homes indicated that their staff were too busy to participate, 5) executive directors did not return responses, 6) the LTC homes were experiencing significant outbreaks and chose not to participate at this time, 7) participants did not respond and 8) in some cases participants responded but did not follow up with availability despite numerous attempts at scheduling.

Given the above difficulties in recruiting participants, I diverged from my initial methodology plan and continued my study by reaching out to rural LTC homes in Huron County, Perth County, Middlesex County, Elgin County, and Essex County. As rationale to support this action, the contacted homes had similar demographics, had rural operating contexts, were provided oversight by the same Ministry of Health compliance officers and were linked to similar public health units. Together, I contacted twenty-one LTC homes (four to six LTC

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homes were originally contemplated), with thirteen LTC homes eventually participating in my recruitment efforts. I note here that in several cases, the executive directors would only provide me access to the IPAC leader for the home rather than the unit managers. In hindsight, the IPAC leaders became good candidates for participation as they had access to all frontline worker training and had primary responsibility for integrating infection prevention best practices into LTC home work routines. Appendix E provides a depiction of recruitment efforts across the twenty-one LTC homes targeted in this research study.

Table 21 provides the results of the Type of LTC homes that were contacted in Lambton, Middlesex, Huron, Perth, Essex and Elgin Counties. The LTC homes are anonymized for confidentiality purposes.

**Table 22**

*LTC Home Type and Location*

LTC home	Ownership Type	County Location
LTC home 1	Private	Lambton
LTC home 2	Municipal	Lambton
LTC home 3	Municipal	Lambton
LTC home 4	Municipal	Lambton
LTC home 5	Private	Lambton
LTC home 6	Municipal	Huron
LTC home 7	Municipal	Huron
LTC home 8	Private	Middlesex
LTC home 9	Municipal	Middlesex
LTC home 10	Private	Huron
LTC home 11	Private	Middlesex
LTC home 12	Private	Lambton
LTC home 13	Private	Huron
LTC home 14	Private	Huron
LTC home 15	Private	Huron
LTC home 16	Private	Huron
LTC home 17	Private	Huron
LTC home 18	Private	Perth
LTC home 19	Private	Perth
LTC home 20	Private	Essex
LTC home 21	Private	Elgin

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To summarize Table 21, in total, eight LTC homes in Huron County, six LTC homes in Lambton County, three LTC homes in Middlesex County, two LTC homes in Perth County, one LTC home in Elgin County, and one LTC home in Essex County were contacted. Six of the LTC homes were governed by a municipality, while the remaining fifteen were privately owned (for-profit).

### ***Participant Details***

As an outcome of my recruitment strategy, I ultimately recruited 20 participants from regional LTC homes. As per my plan, all of the participants had current or recent experience in disseminating and integrating infection prevention best practices into front-line workers. As participant characteristics, my results revealed a collection of both experienced and inexperienced managers, as well as experienced and inexperienced IPAC leads, who together provided rich results for my research questions. For the most part, the experienced managers and IPAC leads had a tendency to answer much more confidently and comprehensively in their responses. The experienced participants also provided more tactical suggestions. A few of the experienced participants had previously worked in hospital settings and could rely on the skills developed in that environment when drawing on tactics. The less experienced managers and IPAC leads were interested in learning from the results of my research. Table 22 provides a snapshot of the characteristics of my participant population. The table identifies the high-level characteristics of the participants by participant number.

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**Table 23**

### *Participants' Characteristics*

Participant #	Years at Organization	Years in Current Role	Role	LTC Home Type
DDBA 0001	5	2	Manager	Small/Rural
DDBA 0002	12	1.5	Manager	Small/Rural
DDBA 0003	17	17	IPAC Lead	Small/Rural
DDBA 0004	9	.5	IPAC Lead	Small/Rural
DDBA 0005	15	10	IPAC Lead	Small/Rural
DDBA 0006	13	11	Manager	Small/Rural
DDBA 0007	1.5	1.5	IPAC Lead	Small/Rural
DDBA 0008	18	1.25	IPAC Lead	Small/Rural
DDBA 0009	5	2.5	IPAC Lead	Large/Urban
DDBA 0010	7	7	Manager/Leader	Small/Rural
DDBA 0011	19	8	Manager/Leader	Small/Rural
DDBA 0012	16	3	Manager/Leader	Small/Rural
DDBA 0013	3	3	IPAC Lead	Small/Rural
DDBA 0014	11	.5	IPAC Lead	Small/Rural
DDBA 0015	8	3	IPAC Lead	Small/Rural
DDBA 0016	3	.5	Manager	Small/Rural
DDBA 0017	10	3	IPAC Lead	Small/Rural
DDBA 0018	22	2	IPAC Lead	Large/Urban
DDBA 0019	22	10	IPAC Lead	Small/Rural
DDBA 0020	20	4	Manager	Small/Rural

To summarize Table 22, all participants were female, the range of years of experience was from 3 to 22 years, the years in the current role were from 0.5 to 17 years, while 12 of the participants were IPAC leads, and 8 were managers/leaders. Further, 2 of the participants worked at large/urban LTC homes, while the remaining 18 participants worked in small and/or rural LTC homes.

### *Ethical Considerations*

As identified in my methodology plan, all approvals were appropriately secured through the Athabasca University ethics process before I engaged with the participants. To reiterate, all participants were invited, by e-mail, to participate if they felt comfortable doing so. There were no exclusions. In addition, twenty-four hours before the interview, I resent the consent form and

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I started the session, reminding the participant to feel free to withdraw at their own volition without consequence. All participants either returned the signed consent form, sent an email indicating consent, or provided verbal consent during the interview. Prior to the interview, I explained how privacy and confidentiality would be observed, the voluntary nature of the study, as well as clearly identifying that the participant can withdraw from the research study at any time.

In terms of other ethical considerations, no individual names or organizational names appeared in the research work. The LTC homes were given a numerical identifier, as were the individuals being interviewed. The names of the LTC homes and individuals were recorded in a separate codebook, computer file, and USB file that were password-protected. As the transcripts were developed, individuals and organizations were only identified by their numerical identifiers. In the long term, all written data and data files are to be maintained securely, confidentially, and anonymously in a locked file cabinet and written and electronic data are destroyed as per university policies. In summary, no ethical issues emerged from the research process.

### ***Demonstration of Rigour and Validity***

In this research study, I placed significant effort into generating a research process that ensured the validity of my work, the credibility of my work, and the ability of my work to be clearly understood and possibly transferable through another researcher in a similar research context (Marshall et al., 2021). The below provides insights into my efforts to establish the rigour and the validity of my results.

First, the interview questions were written in a manner that all participants could understand. Each research question was linked to a research objective that was ultimately aligned

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with the overarching research question that drove my research. The research questions were provided both well in advance of the interview and were provided again 24 hours before the interview.

At the interview, I repeated the context of the research through a prepared script and then guided the participants through each of the individual questions. At the end of the study interview session, to reinforce validity and credibility, I provided the Microsoft Teams-generated transcript to the participant within an hour of the interview, for their comments, as well as an opportunity to provide any further ideas that emerged in their reflections. The participants provided their final approval by e-mail, with their approval response recorded in my field notes and any email identifier immediately deleted for confidentiality purposes. To further demonstrate my diligence to the research project, I carefully documented the time spent in the interview, the analysis and the aggregation of the information in my research process.

Based on the learnings of my pilot interviews, I carefully applied a similar research process to all subsequent interview participants, including a focus on rigor by comparing Microsoft Teams transcripts to my dynamic field notes, continually creating analytic memos that described my process, and most importantly, I disciplined myself to a regimen of reviewing and beginning the first analysis of my data shortly after the interviews. Due to the nature of the Microsoft Teams functionality, I was also able to review the time-sequence recording with the time sequence on my transcripts to ensure accuracy as well as an opportunity to review any perceived discrepancies from the Microsoft Teams translation process.

In preparation for the actual analysis of my data, and to prime my thinking, I carefully reviewed the literature on thematic analysis research processes as well as reviewed tutorials on coding and the use of NVivo, to make myself familiar with the tools and techniques available to

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me. As I began the coding process, the capture of supporting references, and the synthesis of the data, the aggregated results were then saved as three distinct projects in the NVivo application. As will be discussed later, these distinct projects and my accompanying analytical memos served as an audit trail of my activities and as evidence of my rigour in order to reinforce the credibility of my research results. Finally, I continued the process of creating an analytic/observational memo for each participant that described the interview and included comments on my impressions, key insights, and suggestions for the improvement of my research execution.

Another critical aspect of the validity and credibility of my research process is that of reaching data saturation. In this study, I subjectively experienced an impression of data saturation at approximately the twelfth interview. I paused my interviews briefly at the fourteenth interview and undertook a detailed reflection of my codes, and began the process of developing initial clusters of categories and sub-themes. Then, moving to a more deductive lens of data gathering, I planned to capture the number and variety of new codes or subthemes that were produced from the final six interviews. Appendix F provides a table that supports my data saturation observations.

To address the impact of my personal bias on this research, I was careful to remind myself of my biases and totally focus on the comments of the participants as I was constructing my data results. My interview questions were open-ended, and I strove to create a low-pressure environment for the participants to engage in discussions with me. I chose times that were convenient for the participants, and through the use of Microsoft Teams, the research environment was conducive to a conversational style rather than a high-pressure event. My process of taking field notes also kept my mindset on the collection of the data from the participant's perspective, rather than interjecting my views. I was also careful not to reveal my

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findings from the literature until after the interview was over to allow the participant to contribute without bias. I also managed the individual participant interviews with sufficient time to allow the participants to address the questions completely, by allowing for a minimum of forty-five minutes for each interview. The participants were able to participate from the location of most convenience. At the end of the interview, I also gave the participant adequate time to add any information that they thought was important to this study. I also provided my Athabasca University e-mail in case they had other future reflections from engaging in the process.

Finally, and as a critical point, my mindset during the interviews was to experience and understand new insights into the integration of best practices into front-line workers. My research mindset was not one of establishing an evaluative discourse but rather to be immersed in new thoughts and ideas. This mindset, above all, helped me to be reflective of my potential biases and put them aside to learn with an intensity that supported a vision for better resident outcomes as well as an improved provider experience when it comes to integrating best practices.

### ***Data Collection Details***

From December 19, 2024, to March 27, 2025, I completed 20 interviews with LTC home participants. These semi-structured interviews ranged from 20 to 45 minutes, with an average duration of 29.2 minutes. The interviews, conducted via the Microsoft Teams function, were guided by seven specific questions, as listed in Table 23 and repeated in Appendix A. The interview questions sought to understand the experience of managers and IPAC leads as they integrated best practices into the front-line workforce of their respective LTC homes.

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**Table 24**

*Research Interview Questions*

1	From your perspective and experience, how does the organization advance the introduction of new infection prevention guidelines to your unit's workforce?
2	From your personal experience as a leader, can you tell me what approaches work well when implementing infection prevention best practices to your unit's workforce?
3	Can you tell me how you ensure that your staff continue to maintain the infection practices that were introduced to them?
4	Can you describe how ongoing compliance with infection prevention is evaluated by the organization?
5	Can you describe any tools or mechanisms that you find work well when introducing infection prevention best practices?
6	From your perspective, are there any operational barriers that inhibit the transfer of best practices?
7	Anything you would like to add or is missing from this discussion?

The interview questions were designed as tools to uncover insights and strategies into the mechanisms mediating best practice integration into front-line LTC home workers. These questions supported my overall research question and also supported the following five aims:

1. I was interested in the change strategies of organizations and individuals as they attempted to introduce new evidence-informed guidelines into the practices of their front-line workforce.
2. I was interested in how leaders approached the facilitation of change management and whether there were specific leadership abilities required to implement change.
3. I wanted to establish an awareness of the mechanisms and tools the leaders and the organization identified as salient to implementing change in front-line workers.

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4. I was interested in how organizations and leaders sustained and standardized the best practice change in their front-line workers.
5. Through the interview process, I was also interested in any other factors that participants thought were critical to best practice implementation.

### ***The Thematic Data Analysis Approach***

The approach taken in this dissertation was guided by the Thematic Analysis methodology. Thematic Analysis is a qualitative approach which creates codes from actual narrative references and, with rigorous analysis and reflection, ultimately results in themes that crystallize and reduce the thoughts and ideas of all participants into underlying ideas and concepts (Braun and Clark, 2016). I used the qualitative analysis software NVivo version 15 as the baseline application to assist with the data organization and analysis. I note that although NVivo has a mechanism to capture analytical memos of key ideas and reflections, I instead captured my analytical memos in my field book journal and then transferred the notes to a Word document to enhance my focus.

The analysis process commenced with my taking dynamic field notes and refining the written notes into a Word document. In parallel, from the recorded transcripts developed from the Microsoft Teams application, I converted the Microsoft Teams transcripts into a second Word document to begin to capture exploratory codes and connected references from the raw participant data. I also captured and highlighted key supportive quotes in this second document for future reference. These actions provided me with additional familiarity with the participant narrative text and served as the baseline transcript that facilitated the coding process that I would now continue to generate in the NVivo application. The dynamic field notes process and documentation that I describe above also provided a cross-check of the outputs of the Microsoft

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Teams transcripts. These two parallel documents acted as an additional layer of research validity.

The documents that I created from my dynamic field notes were also categorized and sorted by participant interview identifiers, were saved on a password-protected USB drive, and acted as an archival audit trail.

Consistent with Adu (2019), Braun and Clark (2006) and Naeem (2023), I followed the thematic analysis process with rigour. Using the Microsoft Teams recording of participant interviews, it took significant effort and time to familiarize myself with the Microsoft Teams-generated transcripts. Given the limitations of the Microsoft Teams transcription process, and as an added driver of research rigour, I proceeded to go over each line of the transcripts word by word to make sure I understood the core message being offered by the participant. This process gave me immediate familiarity and recall.

The Microsoft Teams converted transcripts were then transferred as separate participant working files to NVivo Version 15 for in-depth analysis. As a first-time user of NVivo, I familiarized myself with the tool over a three-week period, reviewing tutorials provided by the software as well as by reviewing instructional videos by Dr Phillip Adu (2024). Taking the time to learn through these media gave me the confidence to begin the coding process.

Dr. Phillip Adu (2024) described in his training video a three-step process or three-project process to develop themes through NVivo. Each step or project created a deeper level of review and analysis of the coding and theming process of the interview transcripts. The separation by project also provided an audit trail of the research analysis process and an opportunity to go back into earlier versions of the coding process if required.

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Consistent with Dr Adu's instruction, interview by interview, I went through the same process of interviewing, reviewing the transcripts of the participants, familiarizing myself with the transcript material, comparing and reviewing the transcripts with my dynamic field notes, beginning the initial quote extraction, and continuing with the development of anecdotal notes and memos from the transcripts.

In NVivo, I separated each of my seven research questions as its own conceptual container (Adu, 2024) to refine and give structure to my analysis work. I chose to target completing 14 interviews as an informal milestone before I would begin to examine the patterns of data and a consolidation of codes into subthemes.

The first project file from NVivo served as the initial coding analysis and baseline. The results were then copied to a second named project within the NVivo application to begin the next level of analysis. Using the second NVivo project as my new baseline for moving forward with my analysis, I continued to reduce my collective codes within the second project workspace and continued to work through and rearrange the clustered codes into eventual subthemes. See Table 24 below for the observations of the codes and references developed through the first 14 interviews.

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**Table 25**

*Codes and references developed after 14 interviews*

Q1	31 codes	107 references
Q2	34 codes	130 references
Q3	29 codes	111 references
Q4	22 codes	68 references
Q5	35 codes	100 references
Q6	31 codes	115 references
Q7	25 codes	65 references

Note: The above work was created from 290 pages of transcripts and 397 minutes (6.6 hours) of direct interview time. The review and familiarization process with the transcripts took 920 minutes (15.3 hours), initial coding took 955 minutes (15.9 hours), and coding and referencing in NVivo took 1230 minutes (20.5 hours).

The initial codes from the first 14 interviews were created with an inductive mindset in order to harvest the essence of the information provided by the participants and, through the inductive mindset, mitigate my biases to the best of my abilities. I then began the process of creating subthemes for codes within the containers of research questions.

Once the refinement, naming, defining, and editing of codes and subthemes were drafted in Project Two of NVivo, I created Project Three in NVivo to capture the observations of the final 6 interviews with the goal of providing greater verification of the subthemes and evidence of data saturation. To satisfy my aim to achieve data saturation, the following observations are detailed. A total of 207 synthesized codes and 28 subthemes were created in the first 14 interviews. Using the 207 synthesized codes and 28 subthemes as a baseline, a more deductive approach of data capture was followed with the last 6 interviews. Through the analysis of the final six interviews, no new subthemes were developed post the 14<sup>th</sup> interview. A total of 25 new codes (or 12% of all codes) were created in the last 6 interviews (30% of the interviews). Given

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the fact that no further subthemes were identified in the additional data, and a proportionately reduced number of new codes were created from the subsequent interviews, I concluded that I had reached data saturation and was ready to synthesize the 28 subthemes and reduce them to the eventual final number of 8 themes. Once the final six interviews were completed, I calculated that the total time spent in research analysis was 132 hours, generated from 403 pages of participant transcripts. The above work is summarized in Appendix F.

The final step was to create themes that will be ultimately identified as critical factors. Appendix G provides a conceptual map of the subthemes transformed into an initial eight overarching themes. The next section, findings, describes the eight themes within a conceptual framework or normative dimensions.

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## Chapter Five: Findings

This chapter describes and analyzes the findings generated from the participants' responses to the study's research question regarding best practice implementation for infection prevention in LTC homes. The participant responses provided rich descriptions and insights into their perspectives on change management, as well as a dynamic environment that is still evolving in the LTC sector.

This chapter is organized around certain impressions or patterns that were observed in the participant data. These patterns centred around the conceptual dimensions of 1) leadership qualities and frameworks, 2) knowledge, skill and capability development, 3) tactical planning, and 4) a focus on worker attention and reinforcement of practice intentions.

Interestingly, these patterns aligned with the metaphor of the level of preparation and structure required in creating a game plan for a sport such as football. For a professional football team, the head coach and coaching staff are the glue that holds the team's strategy together. The football coach develops a plan to teach the skills required to execute the game plan. Tactics are developed to adjust to different contexts within the game. Finally, constant attention and reinforcement are generated to keep the individual team members on track during the ebbs and flows and the pressure of the game.

Using this metaphor, the following discussion is aligned with Table 25 below, which frames the themes with the conceptual dimension.

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**Table 26**

### *Conceptual Dimensions and Concurrent Themes*

<b>Conceptual Dimension</b>	<b>Concurrent Theme</b>
Leadership Qualities/Frameworks	<ul style="list-style-type: none"><li>• Leadership Activation Drivers</li><li>• Functional Roles</li></ul>
Knowledge, Skills and Capabilities Advancement	<ul style="list-style-type: none"><li>• Developing competencies</li><li>• Achieving Compliance</li></ul>
Tactical Planning	<ul style="list-style-type: none"><li>• Dissemination Methods</li><li>• Contingency Development</li></ul>
Attention and Reinforcement	<ul style="list-style-type: none"><li>• Alerting worker awareness</li><li>• Reflecting and reinforcing</li></ul>

### **Conceptual Dimension - Leadership Qualities and Frameworks**

I continue this chapter with the description, observations and implications of leadership drivers.

#### ***Theme – Leadership Activation Drivers***

From the perspective of study participants, the impact of leadership appears as a critical driver for social organizations that require a persistent and crystal-clear focus. Much like a football coach that must develop a game plan against a competitive opponent, LTC homes are no different, especially as they combat dangerous infectious events. Participants in this study provided evidence about the role of leadership as a force in promoting effective infection prevention practices. This theme defines leadership drivers *as a purposeful engagement and a deliberate mechanism to enable the effectiveness of employees in the consistent and reliable delivery of best practices.*

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### ***Subtheme - Leadership Engagement***

Leadership engagement was one of the more significant references that emerged from the participants' responses to this study. Participants spoke frequently of the need to constantly interact and reinforce best practice initiatives with front-line staff.

***Focus and Reminders.*** Participant responses provided rationale that it was important to generate focus and remind LTC staff of key practices in an approachable and non-confrontational way, by noticing mistakes and recommending improvements, and by providing multiple avenues for delivering practice improvement messages to front-line staff. As an illustration of leadership engagement and the focused communication efforts related to infection prevention practices, participant 10 stated: "there is an e-mail, usually automatically, that goes out saying we have to start doing this effective this date, this is what's going to happen, we are going to have training, so just to make the awareness." Constant repetition, positive reinforcement, and pointed mechanisms to reinforce and remind (e.g., toilet talks) were also a feature of participant responses related to creating focus.

***Visible Leadership.*** As a further illustration of leadership engagement, participants spoke of leaders needing to be visible at the nursing unit level in order to make connections with the frontline staff, be involved in the change, and through one-on-one interaction, be aware of challenges. Visibility helped to make front-line workers feel supported, including during mealtimes and clean up, as a way to make a significant impression and to encourage. Participant 8 shared: "My availability for actual conversation and the one-to-ones with staff being available at any time for their questions and answers. That's the biggest thing, so they know that you're there and you support them". As participant 14 commented: "So being like there and in the moment with them, demonstrating those best practices or the new implementation just, you

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know, encourages staff adherence”. Participant 11 commented: “consistency, constant reminders, the actual physical demonstration of something and going down and talking to them” as being an important activity.

Furthermore, by being seen, the leader can demonstrate best practices through encouragement and by example. As participant 16 explained: “Being present during the change, involving the staff in the change. Listen when they provide feedback about something that doesn’t work. Kind of hands-on experience rather than just doing this and got to follow it, but they are showing through demonstration.” As commented on by participants, visible leadership has a significant role to play in best practice implementation.

***Ad hoc Engagement.*** Participants commented on the importance of ad hoc engagement, or interaction, whether it be attendance at huddles, reaching people to identify gaps, constantly triggering what needs to be done, or by understanding resistance to change. Open engagement, through ad hoc visits, also promoted transparency as it relates to implementation or correcting practice behaviour. As participants suggested, ad hoc engagement is important as interaction is key to understanding, as a leader, that things don’t always work out as you envisioned, especially in environments with resource limitations, such as rural environments.

***Peer champions.*** Another form of leaders' engagement was through distributed leadership initiatives, such as identifying and empowering a peer champion. The peer champion ideally is someone with previous familiarity with the nursing unit and an individual whom front-line workers can approach in a trustworthy manner. Peer champions appeared as an important enabler to best practice implementation.

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***High-Functioning Residents.*** Participants also provided the insight that leaders should engage with high-functioning residents who can help with various aspects of infection prevention (such as helping with hand hygiene). Residents essentially reinforce desired behaviour through a trickle-up approach. If something comes from a resident, it can be more impactful than from a supervisor. Participant 12 stated,

“I go to residence council and family councils as well. We talked to them about what they notice. We have residents coming forward sometimes and saying I know that person never wears a mask right. It's always below their nose”. The leader advised the resident, “you need to tell him that his mask isn't on right.”

***Leadership monitoring.*** Leadership monitoring and auditing were also identified by participants as a form of engagement and as an enabler to best practices implementation. Watching practices in the moment, and through the use of team leads, it was important to monitor day-to-day tasks, report on not doing something correctly, and then correct in the moment. Participant 11 stated:

any staff that are on modified duties, for whatever reason, they get set up with the app, so we have a lot of different people from different departments, different points of view auditing

Leadership monitoring was also summarized as always watching in the moment of care, or as participant 19 stated,

So if someone is not doing hand hygiene properly before donning PPE, then we are going to be reviewing that and I'm going to have my eye on that person. And every time that

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person doesn't do it correctly, then I am going to do in-the-moment training, and then it just progresses from there.

**Walkthroughs.** Leadership engagement and monitoring also took place in walkthroughs with symbolic tools such as the infection prevention cart and the constant interactive presence of the IPAC lead. The strength of the walkthrough or the walking rounds with the infection prevention cart signalled the presence of the IPAC lead and the importance of infection prevention. Here, infection prevention was always at the forefront. As participant 17 remarked: "I feel like when anyone sees me now, like, they're nervous that I'm auditing going into outbreak. So like just trying to not be so serious and just have easy-going conversations with them".

### ***Observations and Implications***

**Observations.** The above participant responses coalesced leadership engagement as a significant mechanism that helps to reinforce the fidelity to a new practice routine through interaction and interpersonal connection. The responses suggested that direct interaction with front-line workers plays a significant role in changing behaviours. Furthermore, leadership engagement through focus, visibility, monitoring and walkthroughs acts as a signal of a new intention and as a communication of the deliberate need for change. Participant responses suggested that in a complex environment, where you rely on people to independently achieve an improved outcome through their actions, the leadership role through interpersonal connection needs to act as a beacon to illuminate the appropriate direction in the darkness of confusion, and this is achieved through a presence that helps provide focus.

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***Why are these findings of importance to the research question?*** The observations from study participants demonstrated the importance of leadership contact, interaction and connection with their front-line staff as a mechanism for change. Front-line staff must have clear instructions and a clear connection to the desired behaviours necessary for best practice delivery. This is achieved through leadership engagement. Hence, the delivery of change management in LTC homes needs engagement driven by leadership personnel who are signalling a required new behaviour.

Table 26 provides a summary of participant responses for this subtheme.

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**Table 27**

### *Leadership Engagement*

<b>Sub Theme</b>	<b>Dominant Codes</b>	<b>Sample Reference Codes</b>
Leadership Engagement	Reinforcing with Staff	<ul style="list-style-type: none"> <li>• Reinforce key messages during meetings</li> <li>• Remind in an approachable and non-confrontational way – build culture</li> <li>• Hear it in multiple ways</li> <li>• PSW supervisor that also provides support</li> <li>• Ask how we are going to correct that</li> <li>• Short things that continually reinforce (toilet talks)</li> </ul>
	Visible as Leader	<ul style="list-style-type: none"> <li>• Must be visible on the unit</li> <li>• Make the connection with the frontline</li> <li>• Go out and be involved in the change</li> <li>• Attend and be aware of challenges</li> <li>• Be there to know they are supported</li> <li>• Need to be used to seeing you</li> <li>• Gentle persuasion – not disciplinary</li> <li>• Need to invest time because staffing so thin and for the team sort of atmosphere</li> <li>• Lead by example in the moment</li> </ul>
	Ad hoc engagement	<ul style="list-style-type: none"> <li>• Ad hoc team huddle</li> <li>• In-service in person</li> <li>• Reach more people to identify the gaps</li> <li>• Just a reminder, this is what we need to do</li> <li>• Talk about resistance to change</li> </ul>
	Open Communication and Transparency	<ul style="list-style-type: none"> <li>• For implementation or correcting practice behaviour that doesn't align with best practices</li> <li>• Things don't always work as you envision them working – understand limitations in rural communities</li> </ul>
	Peer champion	<ul style="list-style-type: none"> <li>• To model best practices</li> <li>• Train other people to do it as well</li> <li>• Familiarity with the unit – assign from the unit</li> </ul>
	Engage Residents	<ul style="list-style-type: none"> <li>• High-functioning resident who can help</li> <li>• The resident reinforces the staff</li> <li>• Helps residents' self-worth</li> <li>• Some residents have been nurses or doctors ...know about these things</li> </ul>
	Leadership Monitoring	<ul style="list-style-type: none"> <li>• Audit and immediately follow up on findings – bring back to regular team meeting and communicate through e-mail (depending on what findings are)</li> </ul>
	Team leads that monitor	<ul style="list-style-type: none"> <li>• Team leads in the neighbourhood that monitor day-to-day tasks</li> <li>• Report on not doing something correctly and correcting in the moment</li> <li>• If they see leader, everyone is more focused</li> <li>• Peer-to-peer reinforcement</li> </ul>

Note. The above synthesized references were generated from participants 1,2,4,5,6,7,8,9,10,11,12,13,14,15,16,17 & 19 (Source NVivo 15)

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### ***Subtheme - Staff Compliance***

Leadership's attention to staff compliance was a unique documented challenge and insight collected from the participants of the study. It appeared from the participant responses that a leader's attention to the fidelity of a new process is key to achieving better outcomes. Hence, the leadership of the LTC home has the task of creating compliance in their direct reports. However, participants also indicated a need to be alert as staff compliance slipped for a number of reasons, as described below.

***Too Comfortable.*** Participants spoke of workers becoming too comfortable and needing constant training and reminders, or things slip up, as workers forget, are tired, or simply do not understand. As participant 7 stated: "Lots of people were burnt out after the pandemic, and they are not alone in that, but they get a little nervous, and so just making sure we are there to support them." Compliance also slips because some employees work opposite shifts and, without a focused effort, miss out on information, hence a need for mitigation, such as posting minutes or adjusting leadership engagement to enhance staff receptiveness to a new practice.

***Resistance Impacting Compliance.*** In some cases, participants indicated that staff show resistance because of frustration with the operating environment (short staffing), or because of a bad relationship with management, or simply because of change fatigue and being overwhelmed. Participants spoke of leaders ensuring front-line staff can call them for support. One participant spoke of *confidence slips* where individuals are more hesitant; hence, the leaders have to give them confidence at the start and support them to overcome resistance. Participant 15 stated:

Them being fully aware of how to implement the best practice, I think, is really important, as the acuity of residents over COVID outbreaks is really challenging. But

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those are the times you need to buckle down and really be thorough and make sure that people aren't cutting corners.

Thus, participant responses provided insights into an awareness of challenges for ongoing compliance.

**LTC Sector Dynamics.** As an important responsibility, LTC home leadership also needs to face the unique dynamics of the LTC sector and its impact on best practice performance. Because of high staff turnover, there is a constant need for orientation for new graduates. Participants shared that new graduates get the basics academically but lack the skills for compliance. Furthermore, workers may have different levels of previous education or have graduated from different programs with different sectoral experience.

Another dynamic that creates variable performance is directed at maintenance staff, dietary staff or other services that come into LTC without the expertise of LTC or intricate knowledge of the local infection control routines. For example, contracted service staff (e.g., equipment repair personnel) who do not have experience in LTC negatively affect infection rates due to a lack of practice compliance. These individuals would also need special attention to mitigate practice variation. Participant 12 shared, “She [IPAC Lead] cannot speak that way to maintenance staff or dietary staff, or a housekeeping staff that maybe has a grade 9 or 10 education and infection control for them is a little bit different.”

Lack of compliance or practice variation also originated from other factors, including staff coming in sick for financial reasons, staff not checking email, staff returning from vacation ununiformed, or simply staff missing important signage. Participants also suggested that staff may

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just fail to see the importance of an initiative, hence the need for leadership to ensure practice compliance through an attention to importance.

***Attitudes.*** Participants spoke of the impact of staff attitudes when trying to achieve compliance. Staff not buying in or not receiving feedback well were prominent comments. In some cases, staff did not take flu shots for religious reasons or were lax because people were not dying anymore. In other cases, staff believed in social media commentary regarding conspiracy theories.

Participants addressed keeping the importance of infection prevention in the minds of staff without scaring people, with lots of education, follow-up, and patience as being critical to success of compliance. Participant 19 builds on this through the comments:

Reinforcing. You're not doing that correctly. I need you to do that like that. It's the reinforcing of what you learned. You can't just teach it once and let it go. It has to be over and over and over again.

***Culture of Openness.*** Participants spoke of striving for a culture of openness and safety to achieve compliance. This is hallmarked by open conversation, not punishing if staff slip up, and for staff to report a challenge without fear. Participants spoke of the culture of an open-door policy where they would rather have front-line staff ask questions rather than not understand. Of note, participants indicated the importance of being non-judgmental when developing a strong culture, as things change all the time, and there is a constant need to chat with staff individually to understand the why behind an obstacle.

***Impact of Families.*** Finally, as a headwind to practice compliance, participants revealed that leadership also needs to pay attention to the impact of the resident's family. Participants

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spoke of family fatigue with masks and sanitization. A further issue is that many families are coming into the LTC home, and with this, the difficulty in controlling the source of infection. Participants spoke of families taking residents out of the home and into a non-protected community and returning them to the home with potential consequences. Participants also spoke of the need to educate families about vaccines, as there can be misinformation with families, families wanting different things, or general family pushback.

### ***Observations and Implications***

***Observations.*** Participants described several factors that negatively impact best practice compliance. Participants' aggregate responses thus revealed a critical function of leaders to ensure compliance with the fidelity of a new infection prevention practice. Like anyone in a dynamic situation, adhering to a new discipline or routine of activities is difficult. To prevent slipping back to old habits and behaviours, participants messaged that leadership is critical as an ever-present driver dedicated to ensuring constant realignment and recalibration of the conscious and unconscious choices of workers and those who interact with the LTC home context.

***Why are these findings of important for the research question?*** In the development of change initiatives, participants provided a consolidated insight into the barriers to implementing best practice changes efficiently and effectively. This applies to the research question as these barriers must be noted by leadership and overcome through detailed planning, attention, or mitigation. Together with an emphasis on a culture of openness, a robust action plan can be created to mitigate these headwinds.

Table 27 provides a summary of participant responses to this subtheme

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**Table 28**

*Staff Compliance and Infection Prevention Focus*

<b>Sub Theme</b>	<b>Dominant Codes</b>	<b>Sample Reference Codes</b>
Staff Compliance and IP Focus	Compliance Slip	<ul style="list-style-type: none"> <li>• Too comfortable, things slip up, need constant training and reminders</li> <li>• Forget or do not understand</li> <li>• Improper aseptic techniques</li> <li>• Complacent because tired</li> </ul>
	Staff busy	<ul style="list-style-type: none"> <li>• Straight nights – don't see them</li> <li>• Night shift to do some teaching and auditing – impossible without their help</li> <li>• Post minutes for nights</li> <li>• Miss out on a lot when only doing nights</li> </ul>
	Staff resistant to change	<ul style="list-style-type: none"> <li>• Because of short staffing</li> <li>• Bad relationship with management</li> <li>• Change fatigue – overwhelmed</li> </ul>
	Staff sick	<ul style="list-style-type: none"> <li>• Staff coming in sick for financial reasons</li> </ul>
	Staff turnover	<ul style="list-style-type: none"> <li>• Brand new grads</li> <li>• Get basics but lack in compliance</li> <li>• Task-driven</li> </ul>
	Confidence Slip	<ul style="list-style-type: none"> <li>• A little more hesitant – have to give them confidence at the start</li> <li>• Support them when they are there</li> <li>• Someone on call to support</li> </ul>
	Levels of educational experience	<ul style="list-style-type: none"> <li>• Knowledge gap from different levels of education</li> <li>• Different programs, different experiences</li> </ul>
	Not clearly communicated	<ul style="list-style-type: none"> <li>• Not checking email, return vacation, missed signage</li> </ul>
	Importance	<ul style="list-style-type: none"> <li>• Think it is not important</li> </ul>
	Outside profession	<ul style="list-style-type: none"> <li>• Maintenance staff, dietary staff who do not have experience in LTC</li> </ul>
	Attitudes	<ul style="list-style-type: none"> <li>• Receiving feedback not well</li> <li>• Not qualified</li> <li>• Struggle to get people to take flu shot, religious reasons</li> <li>• Lax because people are not dying anymore</li> <li>• Misinformation with families</li> <li>• Families want different things</li> <li>• Pushback</li> </ul>
	Education to Families and Visitors	<ul style="list-style-type: none"> <li>• Family fatigue for masks and sanitizers</li> <li>• Lots of people are coming into the home</li> <li>• Educate family about vaccines, etc</li> <li>• Take resident out – not PPE in community</li> </ul>
	Baseline knowledge of staff	<ul style="list-style-type: none"> <li>• Don't have training like nursing staff or rationale behind it – PSW short course</li> <li>• Reading and writing may be a challenge</li> <li>• Reword the question as they may have difficulty interpreting</li> </ul>
	Need to give rationale	<ul style="list-style-type: none"> <li>• Staff need to understand LTC – highly regulated</li> <li>• This keeps you safe as well – hear more, they understand</li> <li>• Keeping importance without scaring people</li> </ul>

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		<ul style="list-style-type: none"><li>• Lots of education, follow up and lots of patience.</li></ul>
	Constant learning process	<ul style="list-style-type: none"><li>• Things change all the time</li><li>• Getting down to chat with staff individually – why aren't you doing this? Why? What is the obstacle?</li></ul>
	Risk to staff	<ul style="list-style-type: none"><li>• PSWs do the hardest work, are in for the longest duration, at the biggest risk ...so this requires their attention</li></ul>

Note. The above table was synthesized from the responses of participants 1,3,6,7,8,9,10,13,15,17, & 20 (Source NVivo 15)

### ***Subtheme - Leadership Effectiveness***

***Support, Education and Modelling.*** Participants verbalized the need to show support to facilitate practice effectiveness. Participants identified that leaders must express that staff are not alone at this, and leaders must do everything to support staff, such as getting suppliers in for education or just making sure that they have everything that they need and encouraging them that they will be safe. As a significant difference maker, leaders need to model the behaviour of integrating infection prevention into daily workflows. Finally, a key action for leaders is to constantly curate messages for implementation, as the frontline workers can suffer from information overload.

### ***Observations and Implications***

***Observations.*** Participants expressed through their responses that leadership effectiveness is a pillar for advancing a new skillset amongst a team. As a social apparatus, teams must gravitate to an operating style that moves the yardsticks of improvement further. Modelling great behaviour also requires that the LTC home leader is intimately aware of what a behaviour standard should be recognized as. The participants also referenced front-line workers as being overloaded by the sheer volume of information. Curating information in a focused and meaningful way appears as a task of effective leadership. Hence, leadership effectiveness involves focusing and simplifying the message.

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***Why is this of importance to the research question?*** Ultimately, leadership is tasked with creating the conditions and the environment to achieve improvement. In this context, leadership effectiveness suggests drawing on an awareness of leadership characteristics that enable a change in subordinates' behaviour. To ensure frontline workers' use of evidence-based practices, attention to support, education, and modelling will help advance an implementation initiative rather than become a barrier to success.

Table 28 provides a snapshot of participant responses to this subtheme.

***Table 29***

### *Leadership Effectiveness*

<b>Sub Theme</b>	<b>Dominant Codes</b>	<b>Sample Reference Codes</b>
Leadership Effectiveness	Show support	<ul style="list-style-type: none"><li>• Know that you are there to support them</li><li>• Not alone in this</li><li>• Get suppliers in to educate – have everything they need and going to be safe</li></ul>
	Model Great Behaviour	<ul style="list-style-type: none"><li>• Model great behaviour of integrating infection prevention into daily workflow – significant differences</li></ul>
	Curate messages	<ul style="list-style-type: none"><li>• Overload</li><li>• Curate messages</li></ul>

Note. The above table was synthesized from the responses of participants 1,2,9,13,15,17,18, & 19 (Source NVivo 15)

### ***Theme – Functional Roles and Supporting Entities***

The leadership and the responsibility of achieving a new practice objective are not always assigned solely to one individual in an organization. Different members of a team or a group can be called upon to provide advice and to take responsibility for modelling behaviour. For a football team, this could be a coaching staff, the video review team, or a leadership group of veterans within the team structure that would enable a winning result. This theme highlights the different leadership stakeholders and entities that participants identified as important to advance best practices in LTC homes. Identified as a key factor, and with a significant focus on the

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delivery of infection prevention practice, the theme is defined as *a focused entity or group tasked with addressing and advising a specific problem, issue, or practice gap in the LTC home work environment.*

### ***Subtheme – Focused Accountable Roles and Responsibilities in Infection Prevention***

***IPAC Role and Infection Prevention Champions.*** As a fundamental structural component, participants described the key functional role of the infection prevention and control (IPAC) lead as an entity that receives public health unit best practices and ultimately transmits this information to frontline staff. As per the participant responses, with carved-out time in their schedules, IPAC leads dedicate energy to conducting education, testing, and follow-up on the floor of the long-term care home. These individuals also developed unit champions amongst front-line staff to help transmit infection prevention practice information. These unit champions were able to step in, in the absence of the IPAC lead, and provide additional guidance as well as expert coverage to front-line staff.

***The Infection Control Team.*** Structurally, some of the larger LTC homes that I interviewed also had an infection control team. The infection control team was identified as an important body that enabled complete focus on infection manifestation and prevention. The infection control team would meet regularly to analyze the impact of new policy, required processes, training needs, and assist with knowledge transfer. Participant 16 gave the following example regarding the team dynamics of an infection control team:

Had an open discussion about how homes implement as a kind of round table. They also had a speaker there talking about, she was an infection control and a lead, and she talked about what she had done in her home regarding another initiative.

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Participant 16 demonstrated the utility of the team approach that strives to share information and to overcome the complex context of infection prevention in LTC homes.

### ***Observations and Implications***

***Observations.*** Participants messaged that the IPAC lead, together with the infection control team, plays a significant functional role within LTC homes for infection prevention and change management. Together with a practice champion, these entities are core functional assets for a change initiative as they are the mechanism to transfer and sustain knowledge and expertise.

***How are these findings of importance to the research question?*** IPAC leads, champions, and infection control teams appear as a foundational cornerstone for LTC homes to embrace when applying strategies of how to implement practice improvement initiatives. Based on the evidence from participants, LTC homes should look to and utilize these entities to the fullest extent to achieve effective propagation processes and information exchange related to best practices.

The below table 29 summarizes the key codes derived from participants for the subtheme.

***Table 30***

*Focused Accountable Roles and Responsibilities in Infection Prevention*

<b>Subtheme</b>	<b>Dominant Codes</b>	<b>Key Reference Codes</b>
Focused Accountable Roles and	IPAC Lead	<ul style="list-style-type: none"><li>• Role receives info from public health guidelines and provides to staff and the leadership team</li></ul>

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Responsibilities in Infection Prevention		<ul style="list-style-type: none"> <li>• Most information, ideas and new practices through IPAC</li> <li>• Time in schedule to conduct walkthrough audits, review policies, learn about updates</li> <li>• Teaching by walking around</li> </ul>
	Infection control team (ICT)	<ul style="list-style-type: none"> <li>• Larger organizations have ICT</li> <li>• ICT meet regularly to analyze and compare to current policies and procedures</li> <li>• Determine what process to use to disseminate</li> <li>• Extra training – can go around and be champions to help correct bad practices</li> </ul>
	Champions	<ul style="list-style-type: none"> <li>• Steps in, in the absence of IPAC lead</li> <li>• Nighttime shift assistance</li> </ul>

Note: The above table was synthesized from the responses of participants 2,4,5,6,9,10,11,12,13, 15,19, &20 (Source NVivo 15)

### ***Subtheme – Purpose Driven Meetings.***

***Mandatory Meetings.*** Participants described that LTC homes relied on purpose-driven meetings as meetings with specific responsibilities in the implementation of best practices. These dedicated sessions would prioritize infection prevention best practice information from the leadership team. Examples of these meetings included mandatory monthly meetings dedicated to exploring a change or new process, or a neighbourhood meeting (a local geographic session) where a practice change would be encouraged within a nursing unit's practice context. Concerning regular mandatory meetings, Participant 7 stated: "We make no assumptions that people remember what happened last year. Everything is retaught, and then we show them, they show us how they do it, and then we teach them through that".

Regular mandatory meetings, which included the attendance of nurse practitioners and registered practical nurses, were utilized as a structured form of practice dissemination. At such a meeting, everyone learned and had the chance to speak.

***Huddles.*** A form of neighbourhood meeting that was widely identified by participants was the neighbourhood huddle, where, in person, small groups would gather for practice change

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opportunities and quick communications. Participant 18 describes the huddle experience as follows:

We do weekly huddles on each unit and we introduce any new introduction of IPAC practices into those huddles as well as with demonstrations. And handouts, whatever is needed to get that information out to the frontline staff. And during outbreaks, we do huddles daily on the units. So if there's any new guidelines that have come out, any new procedures and practices that have come forward since our last outbreak, we make sure that that's huddled in front of the staff, we like to do it face-to-face.

Huddles are quick, tightly focused and informative exchanges that set a sprint of direction to the attendees. These messages are action-oriented and help clarify the immediate task at hand.

### ***Observations and Implications***

***Observation.*** Participants were clear that the mechanism of meetings was a critical tool to spread best practices. Huddles and neighbourhood huddles were almost globally referenced to a practice routine. Meetings and huddles provided a focused opportunity for direct communication and for directional change that provided momentum to enable practice changes.

***How are these findings of importance to the research question?*** The evidence suggests that change management initiatives in LTC homes have to rely on meetings and huddles to concisely pass on key information and focus practice efforts. These meetings, as essential mechanisms, need to be highly effective and focused to optimize the gains required for best practice implementation.

Table 30 below summarizes the key codes from participants that support the subtheme.

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**Table 31**

### *Purpose Driven Meetings*

<b>Subtheme</b>	<b>Dominant Code</b>	<b>Sample Reference Codes</b>
Purpose-driven meetings	Huddles	<ul style="list-style-type: none"> <li>• Very efficient way to get the message across – five minutes</li> <li>• Huddles once a week for everyone, not just front-line staff</li> <li>• Huddles to go over a skill like donning or doffing – let them know we are in an outbreak</li> </ul>
	Regular meetings	<ul style="list-style-type: none"> <li>• Bring to the meeting with MO and RPNs in the regular primary care meeting</li> <li>• Half an hour</li> <li>• Everyone a turn to speak</li> </ul>
	Neighbourhood meetings	<ul style="list-style-type: none"> <li>• Once a month</li> <li>• Whatever discipline is available</li> <li>• IPAC update on new information or communication</li> </ul>
	Team meetings	<ul style="list-style-type: none"> <li>• IPAC lead comes to teach every month</li> <li>• Provide reminders</li> </ul>

Note. The above table was synthesized from the responses of participants 3,5,6,10,12,13,14,15,17, & 19 (Source NVivo 15)

### *Subtheme – Advisory Bodies*

**Use of Advisory Bodies.** Another functional structural element that promoted best practice implementation included the use of advisory bodies. For example, IPAC leads from a network of LTC homes would rely on structured sector meetings to review information, examine data, examine trends, and exchange ideas for better implementation. Participant 18 illustrated an example of the use of an advisory body:

I do monthly summary reports of all of our audit percentages and findings, and then our quarterly reports. It's kind of an action plan report, so we have our goals set for the year. We do our strategic plan. We set our goals, and if there's certain areas of compliance with PPE or hand hygiene at mealtimes for residents. Things like that, if there's certain ones that have been low and we want to focus on those then that's what we'll report

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quarterly. So those are all put into an action plan reported to the Board and to our quarterly IPAC team meetings and we have a resident and family attend our meetings.

Participants identified that some organizations had other advisory structures, such as a quality council or quality assurance committees. As an accountability instrument, these committees monitored the fidelity of a program and were a vital accountability instrument.

### ***Observations and Implications***

***Observation.*** Participants consistently spoke of entities that were advisory in nature by providing information related to enabling and sustaining implementation. Further, participants alluded to the notion that advisory bodies had the added effect of providing a sense of accountability to execute effectively. In summary, advisory bodies help to provide momentum to implementation initiatives.

***Importance to the research question.*** This subtheme is important to the research question as expertise and responsibility for practice improvement must be identified and reinforced through multiple mechanisms. Advisory bodies are an important component for LTC leadership to exploit.

The below table 31 summarizes the key codes from participants that support the subtheme.

***Table 32***

***Advisory Bodies***

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Subtheme	Dominant Codes	Sample Reference Codes
Advisory Bodies	IPAC lead meetings	<ul style="list-style-type: none"> <li>IPAC meetings – review data and compliance</li> <li>Quarterly IPAC team and quality meetings – see data, make changes and measure effectiveness</li> <li>Bounce ideas, see trends, as others may have better outcomes</li> </ul>
	Routine Quality Meetings	<ul style="list-style-type: none"> <li>Quality assurance, quality council meetings</li> <li>Review data ...how many staff are educated in this initiative</li> </ul>
	IPAC report to Council	<ul style="list-style-type: none"> <li>Every month report goes to the council and is discussed there</li> </ul>

Note. The above table was synthesized from the responses of participants 7,9,10,13,14,15,16,17,18 &19 (Source NVivo 15)

### ***Subtheme – Community Sector Partners***

***Liaising with sector partners.*** Participant responses indicated that LTC homes used other structural opportunities for support, such as liaising with community sector partners to assist in advancing infection prevention audits, accreditation, and quality assurance initiatives. Examples of community partners with a focus on infection prevention would be the members of the Public Health Unit, Ministry of Health Compliance Advisors, sector-specific quality committees, or a Registered Nurses of Ontario (RNAO) practice liaison group. The key to these advisory bodies would be their ability to help provide focused and continual expertise and attention to infection prevention practice improvement.

### ***Observations and Implications***

***Observations.*** Functionally, community sector partners are a constant, reliable source of expertise that augments the LTC homes' abilities to deliver best practices. As demonstrated by the participant responses, the expertise comes in a variety of formats. The participant narratives also reveal how LTC homes must establish networks to assist in the delivery of best practices through shared knowledge. LTC homes need to dedicate efforts to find or establish these communities of practice in order to achieve effective best practice information.

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**Why are these findings of importance to the research question?** In developing and sustaining best practice initiatives, LTC homes may consider partnerships with external entities that promote access to functional expertise. The experience and knowledge of these partners can be transferred to LTC homes with effectiveness and efficiency.

The table below, Table 32, summarizes the key codes from participants that support this subtheme.

**Table 33**

### *Community Sector Partnerships*

<b>Sub Theme</b>	<b>Dominant Codes</b>	<b>Sample Reference Codes</b>
Community Sector Partnerships	Teamwork	<ul style="list-style-type: none"><li>IPAC teams, what are we going to do about it, brainstorming ideas, how do we make this work</li><li>Extra set of ideas</li></ul>
	Supportive Agencies	<ul style="list-style-type: none"><li>RNAO practice lead</li><li>Accreditation</li><li>Compliance Advisors from Ministry of Health</li></ul>

Note. The above table was synthesized from the responses of participants 1,4,13,14, & 18 (Source NVivo 15)

### ***Subtheme - Education Meetings***

**Dedicated Education Sessions.** A further major concept verbalized from the participant data was the unique utilization of education meetings for infection prevention purposes and staff development. Education meetings were dedicated to knowledge transfer and to creating an understanding of what process needed to be executed at a particular point of the practice context. Participant 11 shared how well education sessions were received,

Staff were receptive because they know the importance of it, and being through outbreaks and stuff like that, they are generally willing to listen to new ideas because nobody wants to be in an outbreak in a nursing home because it's a nightmare.

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As a fundamental insight, participants revealed that regular education and an emphasis on explaining *the why and the how* of an initiative are important.

### ***Observations and Implications***

***Observations.*** Dedicated educational meetings appear as a core functional mechanism for knowledge transfer to front-line staff. At each education session, new ideas are presented with an emphasis on why a new practice is important.

***Implications for the research question.*** The implication for the research question is that participants widely demonstrated the importance of dedicated education sessions as an adjunct to help front-line workers achieve best practices. Dedicated education sessions appear as a baseline consideration for LTC home leadership to incorporate into their infection prevention initiatives.

Table 33 summarizes the key codes from participants that support this subtheme

***Table 34***

### ***Education Meetings***

<b>Sub Theme</b>	<b>Dominant Codes</b>	<b>Sample Reference Codes</b>
Education Meetings	Neighbourhood Meetings	<ul style="list-style-type: none"><li>• Brings in a training element to the neighbourhood</li><li>• Monthly instruction</li><li>• IPAC nurse attendance for information</li></ul>
	Regular Education	<ul style="list-style-type: none"><li>• More infection and prevention education</li><li>• Shared tips from the ministry</li></ul>
	Explain why?	<ul style="list-style-type: none"><li>• How does it work?</li><li>• What to do in this particular context</li></ul>

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	• Well received if they know how to implement it.
<i>Note. The above table is synthesized from responses of participants 3,4,6,7,11,12,13,15,16,&amp;19 (Source NVivo 15)</i>	

### **Summary**

The Leadership Qualities and Frameworks conceptual dimension illustrates the importance of establishing or optimizing leadership and advisory roles for both individuals and teams that function as conduits for ready access to expertise. These functions also create an accountability function or apparatus, as each of these entities can be anchored to a best practice initiative or standard. The dimension also demonstrates that no one entity can do it all. Using sector partners to help create a network of information and expertise is important for best practice outcomes, as partners help to support the validity and the importance of the practice initiative. Theoretically, as more people are exposed to best practice information from a variety of sources, they have an inherent professional responsibility to advance their practice behaviour to a higher level of performance.

### **Why is this dimension relevant to the research question?**

LTC homes need to place effort into actively supporting leaders and supporting teams in the development of practice improvement. The research results also reveal that structures are in place in many LTC home environments and that LTC homes use these structures for the execution of best practices. Hence, as a LTC home strives for greater quality and effective practices, a reliance on leaders, teams, and advisory functions creates a foundation and an inertia for improvement. LTC organizations and their leaders need to buy into developing these roles and entities as structures in order to spread evidence-based practices as effectively as possible.

### **Conceptual Dimension – Knowledge, Skills and Capabilities Advancement**

Knowledge, Skills and Capabilities Advancement was the second major conceptual dimension that I observed from the participant responses. While the previous dimension focused primarily on guidance and access to expertise, this dimension focuses on skills development and the achievement of capability by frontline workers. Returning to the football metaphor, a team member can be handed the playbook of the team's unique plays for the coming season; however, the team members would miss understanding their role, the sequencing, and the timing of the individual steps of the play. The need for demonstration and repeated practice would be the expectation in the football scenario. Likewise, participant responses for this conceptual dimension were aggregated from the themes Competency Development Strategies and Achieving Compliance, themes that portray understanding, roles, and sequencing.

#### ***Theme - Competency Development Strategies***

The consolidated theme of development of competency strategies is an aggregate of the captured sub-themes: 'Focused Knowledge and Skills Development, Education Aids for Knowledge and Skill Development, and Focused Instruction' that were synthesized from participant responses. As turning infection prevention evidence into frontline workers' practice is a fundamental motivation throughout this dissertation, it was no surprise that the development of workers' knowledge, skills, and abilities, in alignment with the local practice context, and the required best practices in infection prevention, was a fundamental concern for LTC home interview participants. I define this theme *as a conscious activity by LTC homes to generate effective practices, skills, and routines in their workforce's experience to appropriately respond to an infection prevention challenge.*

#### ***Subtheme - Focused Knowledge and Skill Development***

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Unique to this study, participants described a wide variety of mechanisms and means to develop competence in front-line workers. An overarching emphasis was on focused instructions through online approaches, instructional videos, demonstrations, the use of the IPAC leader, and adult learning considerations.

***Online approaches.*** Online training was frequently mentioned by participants as a means used by LTC leaders to focus the staff on best practices and knowledge delivery. Specialty proprietary modules, such as 'HR downloads' or 'Surge Learning', provided organizations with electronic tools to develop competency. These applications were most often used for orientation purposes with new employees; however, they also served as a mechanism for instructing and sustaining staff on new guidelines and the guidelines' practical implications.

The Surge Learning application also had the advantage of providing information to staff regularly, or to act as a backup to help saturate staff with key information without overwhelming them. Surge Learning also had quizzes attached with a minimum mark to pass to measure skills development. If the pass was not achieved, the educator would be alerted to come back, find out what went wrong, and develop an education or training plan with the individual.

***Instructional Videos.*** Instructional videos also provided staff with opportunities to watch and listen to practice changes at their own pace, rather than educating everyone in a large group, where a worker might be distracted. Focused online learning with Videos, YouTube videos, musical parodies, or any mechanism to prevent learning from becoming boring was identified by participants as important for sustaining best practices. Participant 7 stated:

We are always looking for newer, you know, videos. YouTube's a great resource for that type of stuff. You have to watch and like, go through it all first, of course. You always

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want to find something new that has different music to it. Like anything, because they can be pretty stale.

**Demonstrations.** In some cases, online learning, accompanied by a demonstration, was utilized to enhance focus and skill development. Participants advised that online learning is not for everyone, as sometimes workers cannot be relied on to focus on the virtual material like they should. Scenario-based demonstration and infection control carts were also used for knowledge and skill development. Further, scenario-based demonstration provided direct linkage between an infection prevention guideline and a practice event, while the use of an infection control cart gave opportunities for teachable moments, an ability to engage in a discussion regarding a concern and, with the completion of mini quizzes, a candy bar was given as a reward for positive reinforcement.

**IPAC Leaders.** Participant feedback also observed that IPAC leaders had a significant role in training front-line staff on the implementation of a desired infection prevention approach. A key feature of the IPAC leads training program was to enforce the message of why a practice was being reinforced, with supporting rationale, together with proper skill execution. As a key stakeholder in competency development, IPAC nurses were also available to have discussions and to ask or answer questions.

**Email tips and tricks.** To enhance knowledge and skills development, *email tips and tricks* were described by participants as a regular monthly email or newsletter with new information, and with the aim of making infection prevention more interesting. The caution from participants was to not use too many e-mails; instead, to send e-mails once in a while, with an emphasis on highlighting what went well. This practice also encouraged frontline workers to email questions to the leaders. Participant 15 noted:

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Allow them the opportunity to say, email their questions. A little bit more anonymously, like having the leader gather the questions and then send them in. Just bullet points like; These are great questions. Hey, do you want us to come back and answer them? Do you want just answers for them? What would you like? You know, meet them, like in the way that they're asking.

***Hands-on Training.*** Hands-on training, together with role playing, was also widely expressed by participants as a method to facilitate best practice implementation and a means to make a practice part of the normal culture of the workforce. Hands-on training, as an in-person effort, encouraged doing the practice first and, through the demonstration, being there for support. A good example of hands-on training was the use of glowgerm spray, which, with a special light, would show the effectiveness of handwashing. Hands-on demonstration also provided opportunities to overemphasize a technique and an opportunity to ask and respond to questions.

***Adult Learning Considerations.*** Participants also spoke of an attention to adult learning considerations. Comments such as doing a skill three different ways, repetition by doing it to varying degrees, and repeating the knowledge exchange process quarterly were linked to the unique cognitive perspectives of adult learners. The concept of adult learning principles was also emphasized by participants, which spoke to breaking learning into pieces. The advice from participants is that smaller pieces help to get compliance across complex situations. This came with a caution from participant 10: “Don’t make too many changes at once because it does frighten people. If you give the staff the tools they need and then, of course, the education, then it will stick better with them.”

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Focusing on smaller pieces of practice detail also helped to get practice compliance across complex processes and across varied scheduled work hours, when there is no time to focus on a complex issue in short bursts of instruction. The participants also spoke of adult learning and breaking a routine into small pieces as a moment of connection of a component of a job routine with the overall aim of the practice change.

### ***Observations and Implications***

***Observations.*** Through the participant feedback, the evidence prioritized the importance and several mechanisms to provide knowledge and encourage skill development in front-line workers. LTC homes' interventions demonstrated variability in their approaches, describing a continuum from online learning to the use of the IPAC leads as having the key role in education and skills development. A key unique emphasis was of the revelation of a focus on adult learning considerations. Though not mentioned by all participants, this element was strongly advanced by some of the experienced participants as an important enabler.

***Relevance to the study's research question.*** These findings have relevance for the research question, as developing a baseline of knowledge requires trialling mechanisms that will generate effectiveness for the LTC homes' local context. These subthemes' findings provided a selection of mechanisms for LTC home leaders to develop and adapt their work plan for best practice implementation.

Table 34 provides a synthesis of the participants' responses to the subtheme

### ***Table 35***

#### ***Focused Knowledge and Skills Development***

<b>Sub Theme</b>	<b>Dominant Codes</b>	<b>Sample Reference Codes</b>
Focused Knowledge and Skills Development	Online Approaches	<ul style="list-style-type: none"><li>• Online modules</li></ul>

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		<ul style="list-style-type: none"> <li>• Videos – watch and listen on their own better than telling everyone in a group</li> <li>• Surge learning – modules like sterilization – updates everyone regularly</li> <li>• Back up with online education to saturate them a bit and not all at once</li> <li>• Quizzes attached</li> <li>• Under 70% quizzes, locked out, come back and find out what went wrong</li> </ul>
	Hands-on Training	<ul style="list-style-type: none"> <li>• Hands-on training and role playing</li> <li>• Practice, then make it become the normal culture</li> <li>• In person</li> <li>• Do it first and then demonstrate...here to support <u>Glow germ spray</u></li> </ul>
	Demonstration	<ul style="list-style-type: none"> <li>• Best in person</li> <li>• They can ask questions, and you can demonstrate</li> <li>• Over-emphasize – lead by example</li> </ul>
	Require knowledge and skill-based	<ul style="list-style-type: none"> <li>• Need to have knowledge and skill-based</li> <li>• Give them the tools they need and education then it will stick better</li> </ul>
	E-mail tips and tricks	<ul style="list-style-type: none"> <li>• New info, tips and tricks, to make IP more interesting</li> <li>• Not too many e-mails – send once in a while – highlight what went well</li> </ul>
	Adult Learning Considerations	<ul style="list-style-type: none"> <li>• Do it three different ways</li> <li>• Repetition, keep doing it, varying degrees</li> <li>• Repeat every quarter, remind in on-line assignments</li> </ul>
	Break into Pieces	<ul style="list-style-type: none"> <li>• Not too many changes at once – smaller pieces – can ask questions or you see them work through piece</li> <li>• Smaller pieces to get compliance across complexity – not always something small we can fix</li> <li>• How can we connect, is it a job routine, is it a visual aim ...break down and connect with people</li> </ul>
	Train staff on why	<ul style="list-style-type: none"> <li>• Rationale, explanation</li> <li>• Have a discussion and ask questions</li> </ul>

Note. The above table was synthesized from the responses of participants 1,2,3,4,5,6,7,8,9,10,11,12,13,15,16,17, & 18 (Source NVivo 15)

### **Subtheme - Education Aids for Knowledge and Skill Development**

The response to the study questions highlighted elements such as training sets, teachable moments, and tracking aids for knowledge and skill development.

**Training Sets.** Participants referred to a compartmentalized orientation initiative called training sets. Training sets are comprehensive action-oriented modules for PPE application, one-on-one education, neighbourhood education, and practice activation to emphasize themes that are

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important. Training sets can be thought of as customized bundles of information unique to the context of the work environment.

***Teachable Moments.*** Participants spoke of teachable moments. Participant 7 observed: “We use a teachable moment … whenever we go out and we meet with people one-on-one and not like its meant to be punitive.” Participants shared that education in the moment, or after finishing an audit, encourages leaders to go out and meet people one-on-one in a non-punitive way. This action helped counteract an issue, as described by participants, where bad habits are taught to new staff, compounding poor practice routines. Teachable moments are also used to revisit a new practice after a short interval to see if the practice is sustained. If gaps pop up, another education session or focused huddle will be used to mitigate an observation.

***Excel Tracking.*** Two nursing home leaders spoke of the use of an Excel spreadsheet that tracked IPAC education and onboarding, as well as tracking all in-the-moment teaching. If a conversation or a trend pops up multiple times, the IPAC lead could move the implementation process back into a coaching initiative or back to a baseline education initiative.

### ***Observations and Implications***

***Observations.*** Participant comments on educational aids provided several tools developed by LTC homes for improving their practice experience. Larger homes had the resources for the development of training sets, while smaller organizations developed innovative tracking mechanisms, such as a focused incident spreadsheet. Teachable moments or education in the

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moment were an additional insightful mechanism that the participants highlighted as important enablers within infection prevention implementation.

***Relevance to the study's research question.*** The subtheme's relevance for the study's research question, that training, teaching and tracking are important for the implementation of best practices in LTC homes. Also, the sharing of tools such as training sets amongst LTC homes will advance the broader LTC home sector and help to reinforce further adaptivity and innovation.

Table 35 provides a snapshot of the codes related to this subtheme

***Table 36***

*Education Aids for Knowledge and Skill Development*

<b>Sub Theme</b>	<b>Dominant Codes</b>	<b>Sample Reference Codes</b>
Education Aids For Knowledge and Skill Development	Training sets for staff	<ul style="list-style-type: none"><li>• Training sets on how to properly apply PPE</li><li>• One-on-one education ...or if entire neighbourhood is missing something</li><li>• Activation happens where we meet on floor – surge learning is read and forgotten</li><li>• In-person education session – on things we feel are important</li></ul>

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	Teachable moment	<ul style="list-style-type: none"> <li>• Use after we finish audits or go out and meet with people one-on-one, not punitive</li> <li>• Education in the moment</li> <li>• When walking by people</li> <li>• Compounded by staff teaching new staff – teaching bad habits – get that back</li> </ul>
	Regular Training and Retraining	<ul style="list-style-type: none"> <li>• Quarterly training in surge</li> <li>• Personal mandatory training one day per year</li> <li>• New practice, routinely there for something, then revisit after a little bit</li> <li>• Gaps pop up – have another huddle or another education session on this</li> <li>• High turnover – retraining</li> </ul>
	Track education	<ul style="list-style-type: none"> <li>• Excel spreadsheet of education at onboarding</li> <li>• Track all in-the-moment teaching, if conversation multiple times, then move into coaching and work on education</li> </ul>

Note. The above table was synthesized from the responses of participants 2,3,7,8,9,10,11,13,14,16,17,19 & 20  
(Source NVivo 15)

### ***Subtheme - Focused Instruction***

Participants also coalesced their responses towards the concept of focused instruction. An absolute attention to infection prevention was continually described as important by the participants through elements such as demonstration, public health unit resources, teachback, and IPAC instruction.

***Demonstrations.*** Participants spoke of the need for repeat demonstrations and instructions. As Participant 7 stated, “We make no assumptions that people remember what happened last year. Everything is retaught.” Repeated LTC home neighbourhood demonstrations through a glow germ application, or taking the lead on demonstrating a process, with everyone following along, was a tactic described by participants. The participants' message was that it is important to instruct on how easily a virus can spread without precautions.

***Public Health Resources.*** The public health unit was described as having several effective instructional resources for infection control, including videos and a test of knowledge.

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Public Health Unit resources were also identified as a great team huddle resource. Peer monitoring, through a lead RPN, helped to transition public health unit knowledge and best practice adherence as well as spread accountability beyond the leader.

**Teachback.** An intriguing initiative was the teachback method. As participant 7 stated, “they show us how they do it and we teach them through that”. Teachback ensures that a practice was applied appropriately, with the ability to spot and react to missing knowledge immediately.

**IPAC Instruction Connected to the Floor.** Finally, the role of the IPAC lead was critical for focused instruction and competency development. The IPAC lead, connected to the nursing unit floor, provided consistency and ongoing expertise to help with ongoing competency development. Without this role, there was little time for formal education and training in the LTC home environment.

### ***Observations and Implications***

**Observations.** Participants described the significance of focused instruction as an important mechanism in the delivery of best practices. Further, an attention to teaching and access to expert information through the IPAC lead were significant consolidated reflections by participants. Teachback was identified as an efficient yet powerful mechanism to ensure best practice implementation.

**Relevance to the study’s research question.** Aligned with the aims of the research question, determining how to instruct staff on best practices takes constant attention and time resources. The ideas described in this subtheme need to be considered and built into the change

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management initiative through mechanisms such as demonstrations, teachback initiatives, and exploiting the IPAC role.

Table 36 synthesizes the remarks of participants for this subtheme

**Table 37**

### *Focused Instruction*

<b>Sub Theme</b>	<b>Dominant Codes</b>	<b>Sample Reference Codes</b>
Focused Instruction	Demonstration	<ul style="list-style-type: none"><li>• Repeat demonstration – make no assumptions that people will remember what happened last year</li><li>• Neighbourhood demonstration – hand dye – shows effectiveness</li><li>• Big thing to see how easily a virus can spread without precautions</li><li>• Tool that shows how cough goes into hand – highlight masking</li></ul>
	Public Health Resources	<ul style="list-style-type: none"><li>• PH several courses with lots of video, then test knowledge</li><li>• Great huddle resource</li></ul>
	Peer monitoring	<ul style="list-style-type: none"><li>• Lead RPN</li><li>• Transfer their knowledge and practice adherence</li><li>• Champions to spread accountability</li></ul>
	Teach back	<ul style="list-style-type: none"><li>• Teach back to ensure practicing appropriate – can identify missing knowledge right on the spot</li></ul>
	Education from outside sources	<ul style="list-style-type: none"><li>• Webinars, conferences to implement</li></ul>
	IPAC lead connected to floor	<ul style="list-style-type: none"><li>• Someone with expertise to help with ongoing education</li><li>• Without role – no time for extra education</li></ul>

Note. The above table was synthesized from the responses of participants 1,4,5,7,9,10,12,13,14,15,16,19, & 20  
(Source NVivo 15)

### **Significance of the Theme.**

This theme's findings imply that careful attention to the context, educational, and deployment methods eventually enables the development of an improved and adaptive skillset in front-line workers. Given the demand of the LTC home work environment and its dynamic

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context, how an organization develops knowledge, skills and capabilities through competency development strategies and mechanisms demands unique attention by LTC home leaders.

### ***Theme – Achieving Compliance***

The observations below were synthesized into the theme Achieving Compliance.

Compliance efforts create an attention to the routine of achieving compliance without the effort of constant personal reinforcement. Created from the subthemes, Enabling Tools, Reinforce Personal Compliance and Capability, and Developing Culture, participants ultimately highlighted the importance of this theme as a critical factor. The theme is defined *as a structural or framework-oriented system that LTC homes have advanced to implement and ensure the sustainability of new, effective practices.*

### ***Subtheme - Enabling Tools***

The participants of this survey gave notice of structural aspects such as enabling tools, which helped to systematically reinforce and guide best practices. The evidence derived from participants coalesced around elements such as checklists, evaluation, as well as signs and risk assessment tools.

***Checklists and Audit Tools.*** Significant commentary by participants was attributed to the use of checklists and audits. Checklists and audits, as mechanisms, were structured monthly, weekly, or as daily events that would generate observations and data on handwashing, needle use, reprocessing, and the ‘donning and doffing’ of PPE. Audits and checklists essentially acted as a means to uncover if expected practice routines are being broken. The results of checklists and audits would be shared with the leadership team, accountable bodies, and staff to help

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mitigate the risk of an outbreak through improved compliance. Participant 18 reinforced the messaging of audits through the following quotes:

We do walkthrough audits on each unit once a week and PPE and hand hygiene audits two to three times a week if we can fit that into the schedule daily when it's an outbreak.

We focus on spot training to maintain the constant reminders to the staff. Here, I see what you are doing. Let me show you. Now you know how to keep yourself safer.

We do hand hygiene competitions. The glow germ. So we have PSWs gather, and they will go and do their turn at the glow germ, and whoever has no spots on their hands, they have the cleanest hands. We get a chocolate bar and a ticket, and everybody else got participation tickets.

Furthermore, participant 11 stated: "Any staff that are on modified duties, for whatever reason, they get set up with the app, so we have a lot of different people from different departments, different points of view auditing."

***Evaluation.*** Formal evaluation and assessment were also an aspect of systemic compliance efforts. In some cases, Public Health Units were central to the implementation of assessment, with a public health inspector directly following up on an outbreak to make sure best practices in containment were in place at the LTC home. Internal systematic evaluation efforts for compliance included the attainment of IPAC goals, and the creation and review of action plans and transparent performance measurements attributed to the LTC home's processes.

Participant 15 stated:

We post compliance rates on bulletin boards...so what we always say is lean into the positives. If you've got 100% compliance on your hand hygiene, you highlight that. So

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really kind of make that connection. It ends up being more of a visual in the facility ...and ...it is also quite transparent because family and the residents also see it.

Year-end evaluation of IPAC quality indicators was also central to the systematic review of compliance. Evaluation of the overall workforce, or at an individual level, was generated in some homes with an Excel tracking tool that captured 'in the moment teaching' as a means to evaluate efforts and accelerate coaching if the trend points to a variation in knowledge from expectation. As participant 20 revealed in response to my research questions:

So we have what we call workbooks. It's the year broken into quarters. We assess and track our trends. It includes like infections themselves, any outbreaks, any of that type of stuff plus we audit and summarize all the audits so then we debrief about that quarterly and then we do what we call a program evaluation ... this is something our corporate office oversees.

***Signs and Risk Assessment Tools.*** Participants also described signs and risk assessment tools as adjuncts for achieving compliance. Examples included standard isolation signs and risk assessments at the point of care as mechanisms to ensure best practice compliance. Thus, the interplay between tools such as signs and risk assessments complements a structured approach to best practice implementation and the sustainability of the best practice.

### ***Observations and Implications***

***Observations.*** Audits, checklists, evaluations and signs were emphasized in the remarks of participants as mechanisms to ensure practice compliance. Also of significance, evaluation provides a signal to enable or reinforce compliance if mitigation strategies are required.

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***Relevance to the study's research question.*** This subtheme is important to the research question as enabling and monitoring system compliance through tools such as audits, checklists, and evaluations keeps organizations' attention on the desired practice behaviours of their frontline workers. These mechanisms help to provide confidence in best practice implementation and are important considerations for leaders.

Table 37 identifies the dominant codes and sample reference codes captured from participant responses.

**Table 38**

### *Enabling Tools*

<b>Subtheme</b>	<b>Dominant Code</b>	<b>Sample Reference Codes</b>
Enabling Tools	Checklist and Audit Tools	<ul style="list-style-type: none"><li>• Monthly checklists and audits</li><li>• Tip sheet - resources at their fingertips</li><li>• The infection control team and, management team are required to do audits</li></ul>

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		<ul style="list-style-type: none"> <li>• Share audits with employees</li> <li>• Regular audits and observations to monitor adherence</li> <li>• Weekly, monthly, scheduled and unscheduled compliance</li> <li>• Walk-through audits</li> <li>• Environmental services doing cleaning audits as well</li> <li>• Seeing the spread of infection, would know we are breaking practice routines</li> </ul>
	Evaluation	<ul style="list-style-type: none"> <li>• Year-end evaluation – IPAC quality indicators</li> <li>• IPAC goals, action plans to achieve as listed for home</li> <li>• Excel tracking tool ...track in the moment of teaching ...move on to coaching...ask to do a little more work on some education</li> </ul>
	Signs	<ul style="list-style-type: none"> <li>• Little made-up cards and signs as reminders</li> <li>• Standard isolation signs</li> </ul>
	Risk assessment tool	<ul style="list-style-type: none"> <li>• Risk assessment point of care</li> <li>• How to don and doff [PPE] right there so they remember how to do it</li> </ul>
	Public Health Assessment Tool	<ul style="list-style-type: none"> <li>• Public health assessments</li> <li>• Public health inspector to follow up on outbreak – towers set up right, right mask</li> </ul>

Note. The above table was synthesized from the responses of participants 1,2,3,4,5,6,7,8,9,10,11,12,14,15,16,17,19, & 20 (Source NVivo 15)

### ***Subtheme - Reinforce Personal Compliance and Capability***

A focus on personal compliance reinforcement was evident among participants through elements such as walkthroughs and daily communications.

***Walkthroughs, Competency Review & Risk Assessment.*** Participants revealed that reinforcing workforce compliance through regular walkthroughs allows leaders to observe how practices are being done by frontline workers. This mechanism gives leaders a first-hand look at how the workforce is performing and where there are risks to best practice compliance. As per participant comments, annual competencies review, self-assessment, and risk assessment act to further compliance orientation initiatives. Furthermore, risk assessments that identify a hazard and then a link to a concomitant performance standard structurally provide compliance opportunities at key moments in the care process.

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**Daily Communication Opportunities.** Daily communications is also referred to as a tactic by participants to ensure personal compliance by the front-line workers. Daily communications can also appear through unobtrusive mechanisms. For example, several participants spoke of using the back door of the toilet stall as a unique, effective location for daily written communication. As participant 14 observed: “when they go to the bathroom, they, you know, they take a few seconds and read something new. It’s just something fun, and honestly, we used it in the hospital that I was at, and I have learned so much from toilet talks.”

### ***Observations and Implications***

**Observations.** Participants offered a range of mechanisms to ensure compliance is reinforced. Walkthroughs and competency reviews were frequently detailed by participants. Some mechanisms are innovative, such as ‘toilet talks’, which attempt to keep messaging continually available.

**Relevance to the study’s research question.** From the research questions context, walkthroughs, competency reviews, risk assessments and daily communication offer a choice of mechanisms for practice improvement for LTC home leaders. These activities promote the effectiveness of clinical practice guidelines through attention to improved compliance.

Table 38 provides a summary of the data collected from participants in the interview process.

### ***Table 39***

#### ***Reinforce Personal Compliance and Capability***

Subtheme	Dominant Code	Sample Reference Codes
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Reinforce Personal Compliance and Capability	Walk through	<ul style="list-style-type: none"> <li>• Observe practices being done, and how</li> </ul>
	Annual competencies review	<ul style="list-style-type: none"> <li>• Annual competencies review</li> <li>• Complete annual competence of their infection control policies and mandatory annual review</li> <li>• Monthly training videos and audits</li> </ul>
	Self Assessment	<ul style="list-style-type: none"> <li>• Self Assessment</li> </ul>
	Awareness of Expectations	<ul style="list-style-type: none"> <li>• Present expectations from public health feedback</li> <li>• Maintains transparency with staff</li> </ul>
	Risk assessment	<ul style="list-style-type: none"> <li>• Hazards at the time of the event. What might we do?</li> <li>• Specific examples at neighbourhood meetings</li> </ul>
	Daily communication in Outbreak	<ul style="list-style-type: none"> <li>• Sometimes more than daily ...have general questions ..or if an issue ...they can help with practice questions</li> </ul>
	Inspection	<ul style="list-style-type: none"> <li>• Public health goes through what we are doing and then we work with them to make changes</li> </ul>

Note. The above table was synthesized from the responses of participants 1,3,6,7,8,9,10,13,15,16,17 & 20 (Source NVivo 15)

### ***Subtheme - Develop Culture***

The culture of a team or organization helps to create either practice inertia or a barrier to effectiveness. Participants spoke of culture through symbolic elements such as an infection prevention cart symbol or building a culture of infection control.

***Infection Control Cart.*** A significant systemic driver of compliance was the development of an infection control culture. Numerous illustrations of tactics to build culture were observed from the participants' remarks. The use of an infection control cart was a concrete symbol of the infection prevention culture that an organization sought to achieve through the cart's focus on teaching, PPE distribution, and skill reinforcement.

***Reinforcing and Building a Culture of Infection Control.*** Continually reinforcing and repeating infection prevention practices kept the best practices front of the minds of frontline workers. Participants identified that building a culture of infection control is also an effort to create accountability through the creation and follow-up of organizational, departmental, and

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unit-specific goals. Culture was also built individually through constructive feedback when noticing issues or complimenting individuals on good performances.

### ***Observations and Implications***

***Observations.*** The more experienced participants of the study spoke of the importance of developing an infection prevention culture within their organizations. Reflecting on the participants' remarks, culture appears to create the glue and the guideposts for group and individual action.

***Relevance to the study's research question.*** From the research question perspective, culture can be an enabler or a barrier to practice improvement. Participants reinforced that leaders must use culture as an enabler to promote infection prevention, given it is such an important force within organizations.

Table 39 provides a synthesis of the data collected from participants for the subtheme.

***Table 40***

***Develop Culture***

<b>Subtheme</b>	<b>Dominant Code</b>	<b>Sample Reference Codes</b>
Develop Culture	Infection Control Cart	<ul style="list-style-type: none"><li>• Demonstrate, information, information booklets, education</li><li>• Box of gloves, hand sanitizers</li><li>• Laminated signs for easy reference</li></ul>

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	Consistent Bring Forward	<ul style="list-style-type: none"> <li>• At neighbourhood meeting, even when not in outbreak</li> <li>• Weekly, monthly</li> <li>• Do it every time instead of guessing</li> </ul>
	Build a culture of infection control	<ul style="list-style-type: none"> <li>• All want to get out of the outbreak together – internal mentorship</li> <li>• Drives accountability</li> </ul>
	Constructive Feedback Session	<ul style="list-style-type: none"> <li>• Notice issues – constructive feedback</li> <li>• Give feedback while they are doing it</li> </ul>
	Goals	<ul style="list-style-type: none"> <li>• Goals for each IPAC lead ... one for each home</li> <li>• Goals for division, then each department has goals under that</li> </ul>
	Infection prevention topics in the huddle	<ul style="list-style-type: none"> <li>• Keeps fresh in people's minds</li> </ul>

Note. The above table was synthesized from the responses of participants 1,5,10,11,12,14,16,18, & 19 (Source NVivo 15)

### **Significance of the Theme.**

The theme implies that attention to compliance is an important driver for sustained practice improvement and creating capacity. Performance can slip, and mechanisms such as enabling tools, effective communication, and culture ensure effective practice remain important in the consciousness of front-line workers. Achieving compliance is not a passive action. As demonstrated by participant interviews, compliance takes work and relentlessness.

### **Why is this Dimension Relevant to the Research Question?**

Knowledge, skills and capability advancement place an emphasis on the LTC home leadership to capture an individual's intellectual interest and to execute a skill effectively. Like the intention of a football coach, execution is a key concern. However, football players or LTC home frontline workers need to know what to execute. Advancing competence and capabilities in frontline workers is foundational for execution.

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## **Conceptual Dimension - Tactical Planning**

Tactical planning is a conceptual dimension focused on a plan of action designed to achieve an objective. Tactical plans involve timing, the responsibilities of key roles within an initiative, and tactical plans must consider the resources required to achieve the objective of the initiative. Returning to the football analogy, an example of a tactical planning initiative would be to plan the process to execute a field goal. In such a scenario, the snapper, the blocking lineman, the kicker and the holder would all need to coordinate their specific responsibilities for this strategic play. This play would need to be designed, demonstrated, practiced and standardized to determine when such a play can be used (e.g. within 40 yards of the field goal posts as determined by the strength and accuracy of the kicker's leg).

As per the synthesized evidence from the participants, tactical planning occurs as a best practice dissemination mechanism as well as planning for contingencies. The tactical planning dimension is constructed from the themes Dissemination Mechanism and Contingency Development.

### ***Theme – Dissemination Mechanisms***

The consolidated theme of Dissemination Mechanisms was distilled from the subthemes and the remarks of the interview participants. Through my analysis, it appeared that the experience and the learnings from the COVID-19 pandemic created focused attention on dissemination mechanisms and specific actions for the propagation of infection prevention knowledge and best practices. For clarity, I formally define this theme as *a structured dissemination of evidence through analysis, action planning, policy adjustment, and meeting approaches*.

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### ***Subtheme - Use of a structured methodological introduction, spread and dissemination of the Infection Prevention Guideline***

***Structured approaches.*** Study participants gave evidence of the use of a structured approach to best practice spread and implementation. Participants described following a consistent methodology or framework aligned to a purpose. Examples of a structured approach included filtering new information through a leadership group, the active comparison of existing policies to new evidence by a dedicated group, and having a concrete project plan of actions to implement the proposed change. Participant 18 stated the following regarding the utility of the leadership group in best practice implementation:

We look at best practices and public health together as a team, as a leadership team, and decide on which policies and procedures, and how we want to proceed. To change a lot of times, we air on the side of caution and don't if the recommendations are not backed up. Sometimes we keep a little bit higher than recommended for extra protection.

Regarding the comparison of existing policies of the organization with new practice standards, participant 10 stated: “We would disseminate the information to figure out what we would need to do” then “make a plan, a project plan, on how we are going to present it back to the frontline.”

Participants suggested that a key component of best practice dissemination would be to involve staff in the discussion. An example of involving staff would include determining where the best location for a device would be (e.g. sanitizing machine). As participant 7 recounted: “How is this going to work best for us? Where should we locate?”

***Creating an Action Plan.*** Participants spoke of the development of an action plan or work plan. Such an exercise would involve assessing what is already in place and what is still

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needed based on new guidelines. Specifics, such as how to educate and train, as well as the timelines for execution, were important aspects of the action plan.

### ***Observations and Implications***

***Observations.*** The participants gave considerable attention to the need for a structural methodology in the dissemination of infection prevention strategies. At its core, the leadership team of a LTC home has a critical responsibility to become aware of best practice changes and to develop actions to propagate their findings. Responsibilities appear to come with an accountability instrument, such as an action plan, which disseminates best practices through internal organizational stakeholders.

***Implications for the research question.*** This subtheme offers guidance on establishing a process through a network of stakeholders, including a leadership team. The need to filter and apply best practices becomes a critical part of dissemination. The development of an action plan or project plan is a key insight for LTC home leaders' approaches to implementing best practices.

Table 40 below summarizes the key codes from participants that support the subtheme.

### ***Table 41***

*Use of Structured Methodological Introduction, Spread, and Dissemination*

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Sub Theme	Dominant Code	Sample Reference Codes
Use of a structured methodological introduction, spread and dissemination of the Infection Prevention Guideline	Use a structural approach to dissemination	<ul style="list-style-type: none"> <li>• Leadership Group</li> <li>• Compare to existing policies – how big of a change</li> <li>• How will we implement</li> <li>• Project plan</li> <li>• Leadership training – cascade down to team huddles and formalized training sessions</li> <li>• Announcement first, having a meeting, sent to staff, break it down to facilitate</li> </ul>
	Create an Action Plan and a work plan	<ul style="list-style-type: none"> <li>• Develop a work plan from the review and then a work plan</li> <li>• Assess what is in place and what is needed</li> <li>• How are we going to educate and train?</li> </ul>
	Tweak Policies and Procedures	<ul style="list-style-type: none"> <li>• New emerging evidence – work on policies pertaining to new evidence</li> <li>• Make sure management and physicians are ok with changes that need to be made</li> </ul>
	Review training requirement	<ul style="list-style-type: none"> <li>• Training requirements reviewed</li> <li>• Huge training or tweaks?</li> </ul>

Note. The above table was synthesized from the responses of participants

1,3,4,5,6,7,8,9,10,11,12,13,14,15,16,17,18,19 &20. (Source NVivo 15)

### ***Subtheme - Focused Meetings***

As an important methodological tool, focused meetings were frequently mentioned by participants as a mechanism to complete a unique task. Participants were of the consensus that dissemination of best practices occurred effectively through focused meetings.

***Team Huddles.*** One such tool was the team huddle as a mechanism, through small groups, to disseminate critical information. Huddles are mentioned frequently throughout this study, given their adaptive nature and their immediate utility. Usually occurring at a nursing station, huddles offered a person-to-person connection to help uncover challenges, new directions, or were used as an opportunity for short, focused training. Huddles can either be regularly scheduled or impromptu to provide a critical opportunity for awareness and practice modification.

### ***Observations and Implications***

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***Observations.*** Meetings are the primary tool for dissemination, and as it applies to implementation with front-line workers, team huddles are a very effective mechanism. The brevity and the efficiency of a huddle create a close to an individualized explanation and encouragement of a new practice standard. Participants were nearly unanimous on the utility and the effectiveness of a team huddle.

***Implications for the research question.*** Answering the question of how, the recommendations by participants of structural approaches, action plans, and focused meetings appear as sound advice for the transfer of best practices in a complex environment. Huddles are of particular interest due to their adaptability and flexibility to task. The advice to LTC homes is to prioritize the use of huddles as a primary method to disseminate and reinforce information as a component of a larger implementation initiative.

Table 41 provides a snapshot of the coding aligned with this subtheme.

**Table 42**

### *Focused Meetings*

Subtheme	Dominant Code	Sample Reference Codes
Focused Meetings	Huddles	<ul style="list-style-type: none"><li>• Small groups</li><li>• Nursing station with the incoming shift</li><li>• Person-to-person connection</li><li>• Daily huddles with the quality improvement coordinator</li><li>• Helps to uncover challenges coming about, new direction, or educational opportunity</li><li>• Talk about what the ministry noticed</li><li>• Short, focused training as a long session gets lost in translation</li></ul>

Note. The above table was synthesized from the responses of participants 4,5,6,7,8,9,11,12,13,14 &15 (Source NVivo 15)

### **Significance of the Theme.**

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The implications of this theme are the emphasis on a structure and a pathway for the customization and spread of critical information within the LTC home context. The mapping of how information ultimately reaches the frontline worker and sustains the workers' practice was an important insight as to how to help frontline workers use evidence to enhance infection prevention outcomes. The plan is the key, and involving significant stakeholders in the planning process will increase the probability of success with the appropriate expertise and stakeholder buy-in.

### ***Theme - Contingency Development***

As the narrative below will suggest, the need to plan for different risks or contingencies in the execution of best practices led to the participant data being themed as contingency development. This theme speaks to the evident need to plan for different risks or contingencies in the execution of best practices within the context of the LTC care home environment. I define this theme as *a systematic planning approach to addressing risks that first identifies the risks and then requires the relentless pursuit of mitigations or proactive activities.*

### ***Subtheme - Physical Plant Deficiencies***

When discussing issues related to best practice implementation, participants described the general efforts required to modify workflows and processes related to implementation due to physical plant layout issues and deficiencies.

***Layout issues.*** Participants gave considerable feedback related to implementing best practices in a challenging physical layout. Issues emerged regarding the inconvenient location of dirty utility rooms, the constraints of the size of the resident dining room, the difficulty of

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providing a safe environment for staff to congregate, as well as the implementation challenges that emerge from inadequate space for families to visit with residents.

***Air Quality.*** Participants indicated that air circulation was poor, especially in older LTC homes, with the need for more filtration and the paramount need for extra vigilance. The fact that LTC homes do not have negative pressure rooms, unlike hospitals, was also a headwind to infection prevention implementation.

***Storage Issues.*** Space for the storage of equipment and PPE was a significant constraint in LTC homes. This constraint included the need for holding space to sanitize equipment between uses.

***Staff separation.*** Due to constrained space, it was also difficult to be able to keep staff apart in order to mitigate cross-contamination. This was especially apparent when staff needed distance between each other with masks lowered during meals.

### ***Observations and Implications***

***Observations.*** The physical plant and configuration of LTC homes were a major consolidated concern of participants of this study. Layout and space challenges were exhibited with frustration during the interview. Issues such as the location of eyewash stations, the need for splash shields, and the need for a plan to sanitize equipment between uses were additional themes that identified a need for a process-oriented focus or recalibration of best practice delivery within the context of a deficient physical plant.

***Implications for the Research Question.*** The interface between the goals of an infection prevention practice guideline and the physical layout of a LTC home is of particular importance to leaders when designing strategies for older LTC homes. It is important to recognize that LTC

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homes are not hospitals and, as such, the tactical design for an implementation strategy must blend into the constraints of the local context. Furthermore, the message from participants was that the physical plant of the older LTC homes and the layout had an impact on best practice implementation that required just-in-time adaptation for LTC home leaders.

Table 42 identifies the synthesized codes from participants for this subtheme.

**Table 43**

### *Physical Plant Layout Deficiencies*

<b>Sub Theme</b>	<b>Dominant Codes</b>	<b>Sample Reference Codes</b>
Physical Plant Layout Deficiencies	Layout	<ul style="list-style-type: none"><li>• Dirty utility room down the hall</li><li>• Dining room size – two at a table, partitions needed</li><li>• Difficult dividing a neighbourhood home</li><li>• One lunchroom for staff</li><li>• Space for families</li></ul>
	Poor physical barriers	<ul style="list-style-type: none"><li>• Need for splash shield</li><li>• Centralized dining room</li><li>• Once care centres – hard to assign staff</li></ul>
	Air quality	<ul style="list-style-type: none"><li>• Circulation poor</li><li>• Negative-pressure rooms are needed</li></ul>
	Storage	<ul style="list-style-type: none"><li>• PPE and equipment storage</li></ul>
	Age of Home – Repairs	<ul style="list-style-type: none"><li>• HVAC issue</li></ul>
	Need to sanitize equipment	<ul style="list-style-type: none"><li>• Hard to sanitize between use – e.g., lifts</li></ul>
	Staff Separation	<ul style="list-style-type: none"><li>• For eating (mask down – 6 feet away)</li></ul>

Note. This table is a synthesis of the responses of participants 2,5,6,7,9,10,12,13,14,15,17,18,&19 (Source NVivo 15)

### ***Subtheme - Resource Deficiencies***

Participants' descriptions centred on observations that experiencing resource deficiencies also required additional efforts and process planning to support best practice implementation.

***Limited Resources.*** Illustrations by participants of working with limited resources included the time spent developing workarounds because of a lack of staffing and volunteers, scrambling to cover shifts on a weekend if an outbreak occurred, and the time spent testing the

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proper function of infection prevention equipment. Moreover, maintaining service to difficult resident cohorts and housekeeping shortages created unique problems that leaders needed to work through to address when implementing best practices. As participant 19 stated, concerning limited resources and environmental issues, “I really feel we need to focus on the environment to keep our residents safe, and I find that we don’t have enough of that environmental staff, the housekeeping staff, to make sure that happens”.

**Time.** As a contingency factor, participants observed that the lack of time (time as a resource) prevented participants and workers from staying up to date, doing necessary audits, necessary training, time for proper discussion, and the time to properly put on and take off PPE. Time with front-line staff was also a barrier to contend with, especially with the broad spans of control the LTC leaders faced. Developing a plan to reach each worker with practice details was perceived as a common concern amongst interview participants.

**Rural Isolation.** As a unique contingency, rural LTC homes also had issues with how much longer it took supplies and people to reach the facility. These elements not only affected normal operations but had special amplified significance when implementing infection prevention protocols with urgency.

### ***Observations and Implications***

**Observations.** Aside from the inherent complexity and the risks associated with caring for frail elders with comorbidities, the additional burden of limited resources, time, and a higher span of control over employees made implementation difficult. For some participants, the rural location of a LTC home and its negative impact on the efficiency and timeliness of the arrival of

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staff and resources also made best practice implementation difficult. Leadership planning, as it relates to an environment of resource deficiency, was a major message from participants.

***Implications for the research question.*** An understanding of the inventory of resources, available time for coverage of key tasks and the extra planning efforts needed for rural agencies is a key learning from this study that impacts on the insights that LTC leaders must consider for practice implementation. In some cases, these barriers are not easy to overcome; hence, leaders need to take the time to map activities to adjust to their unique circumstances.

Table 43 provides a snapshot of participant responses related to the subtheme.

**Table 44**

*Resource Deficiency*

Sub Theme	Dominant Codes	Sample Reference Codes
Resource Deficiency	Limited resources	<ul style="list-style-type: none"><li>• Insufficient PPE and outdated equipment</li><li>• Need to be properly functioning and tested</li><li>• Staffing and volunteer needs</li><li>• Positions no longer available</li><li>• Too difficult for one-on-one supports – patient</li><li>• The ministry doesn't always provide funding for a new requirement</li><li>• Housekeeping key</li><li>• Budget constraints affect things like auditing</li></ul>
	Time	<ul style="list-style-type: none"><li>• To stay updated, do audits, and training</li><li>• For proper discussion on an issue</li><li>• Scrambling to cover shifts</li><li>• Friday night outbreak ...make sure everyone is aware</li><li>• Time to 'don and doff'</li></ul>
	Span of Control	<ul style="list-style-type: none"><li>• Hard to contact every single individual to ensure education is grasped</li></ul>
	Rural somewhat Isolated	<ul style="list-style-type: none"><li>• Longer for people to come out</li></ul>

Note. The above table is synthesized from the responses of participants 1,3,4,5,7,9,10,11,12,14,16,17,18 & 19  
(Source NVivo 15)

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### ***Subtheme - Resident Dynamics and Treatment Philosophy***

LTC homes have very unique operating environments within the health care sector. The intensity of service is countered by the fact that this is a long-term home for the resident.

***Treat as a resident's home.*** Another major action-based contingency activity of LTC home leadership was to ensure the LTC home was not institutional in its aesthetics and operation. Philosophically, these are resident homes. Unique challenges included generating plans to address everything that needed to be portable and single-use, finding new ways to isolate without locking residents in the rooms, addressing the negative behaviours of families who came into the LTC homes, and addressing cognitive resident behaviour that prevents isolation or keeping the mask on. Participant 17 summarized with simplicity the dynamic dilemma between the LTC home philosophy and infection prevention experiences. “Hand hygiene, you’re supposed to be doing hand hygiene when you’re in the resident’s room, but we’re not allowed to have boxes of gloves in the resident’s room.” At its core, Participant 17 summarizes the tension between best practice implementation and the philosophy of a resident’s home.

***Unpredictable.*** Generally, participants disclosed that due to the nature of the LTC home and associated resident dynamics, addressing unpredictability and working to ensure that staff are prepared and confident to start a process, and do it correctly, was a key contingency concern. As participants shared, an outbreak can occur at any moment, and infection can spread rapidly in unprepared workplaces.

***Cohort Implications.*** Participants conceded that the planning to cohort infected dementia residents with limited staffing needed to be done in advance, as extra consideration is required for behaviours that confound infection prevention (such as the resident taking the mask off).

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Participants spoke of protecting the cohort from new admissions as well. Often, residents arrive from the hospital and need to be isolated to prevent the transmission of infection to other residents.

### ***Observations and Implications***

***Observations.*** Participants expressed the challenges of working within the unique idiosyncrasies of the LTC environment that set it apart from acute care environments. With the major emphasis that LTC is meant to feel like a home and not an institution, finding the fine line to efficient and effective infection control is a challenge. The unpredictable nature of the LTC client is also a major factor that makes infection prevention implementation a difficult challenge.

***Implications for the research question.*** The resident interaction within the LTC home environment needs to be mapped out with possible contingency factors as areas of focus when developing infection prevention initiatives. As a form of codesign, implementation planning should take place with residents and family needs clearly in mind. Hence, planning for risks and contingencies appears as a staple for leaders to undertake in preventing the spread of infection in LTC homes.

Table 44 provides a snapshot of participant responses for this subtheme

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**Table 45**

### *Resident Dynamic and Treatment Philosophy*

<b>Sub Theme</b>	<b>Dominant Codes</b>	<b>Sample Reference Codes</b>
Resident Dynamic and Rx Philosophy	Treat as a resident home	<ul style="list-style-type: none"> <li>• Need to remember these are people's homes</li> <li>• Everything has to be portable</li> <li>• Single-use things need to put out</li> <li>• Guidelines unaligned with the home environment</li> <li>• Can't lock someone in the room or force them to wash their hands</li> <li>• Isolation is a big barrier – hard to meet regulations – food temperature – assistance needed</li> <li>• No control over families coming in</li> <li>• Cannot lock institutional (hand hygiene units in each room)</li> <li>• Cognitive behaviour preventing isolation</li> </ul>
	Unpredictable	<ul style="list-style-type: none"> <li>• Outbreak Friday night – make sure staff are confident to start the process and do it right</li> </ul>
	Cohort implication	<ul style="list-style-type: none"> <li>• HR barriers – might not have enough staff for a unit</li> </ul>
	Resident is coming sick from the hospital	<ul style="list-style-type: none"> <li>• Needs to be in isolation 4 days</li> </ul>
	Resident compliance	<ul style="list-style-type: none"> <li>• Dementia, not keeping the mask on</li> </ul>

The above table is synthesized from the responses of participants 4,6,7,8,9,10,12,17, &18 (Source NVivo 15)

### **Significance of the Theme.**

This theme highlights the impact of extraordinary factors that can create variance in implementation processes. Each LTC home is unique, which makes localized planning unique. The implications for LTC home practice improvement are to take the time to assess both physical structure risks and resident risks to develop risk mitigation action plans to ensure the achievement of the change objective.

### **Why is this dimension relevant to the research question?**

The dimension of tactical planning represents an underlying insight that the receipt of infection prevention guidelines is not enough to ensure implementation and improved outcomes. Different situations require different solutions. Planning activities need to be accompanied by specific steps or tactics in order to create change at an individual, team, or frontline staff level.

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## **Conceptual Dimension – Attention and Reinforcement**

One of the more surprising findings of this study was the significant effort that participants described to grasp and maintain the attention of front-line workers in LTC. Returning to the football analogy, in the case of a football game with 80,000 fans in attendance, television replays focusing on every mistake, and suboptimal weather conditions, attention to process can be distracting. Getting the player to focus on the details of execution, rather than the implications of the result, is a coach's ultimate challenge.

Hence, as a workplace of considerable stress and complexity, keeping the workers focused on the details of infection prevention is likely a major challenge. And, as we know, viruses do not take holidays and are opportunistic at any moment. This formidable opponent requires a determined level of practice commitment, especially in moments of outbreak. This dimension is built on the themes 'Alerting Worker Attention' and 'Reflecting and Reinforcing'.

### ***Theme - Alerting Worker Attention***

The narrative below concerns the explicit efforts described by participants to harness worker attention, then immerse the worker with expectations regarding best practices, and finally, keep those best practices front of mind over the long term. Study participants gave tremendous insight into the effort to gain, maintain, and concentrate the attention of front-line workers. As we are aware, in times of stress, an individual has the potential to be overwhelmed by the magnitude and the complexity of the information directed at them. Hence, as observed through participant responses, a problem leaders must solve is how to direct a worker's attention to make the best choices at a critical moment of action. To this end, I define this theme *as the mechanisms for the advancement of the front-line workers' attention or mindfulness in choosing a desired effective behaviour.*

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### ***Subtheme - The Use of Diverse Communication Tactics***

Participants identified that the use of diverse communication tactics is a mechanism for introducing and sustaining their implementation initiatives.

***Supportive Communication Methods.*** The research participants spoke of the unique and diverse methods required to enable and to bolster the integration of the communications of new practices into their front-line staff behaviours. Verbally preparing staff as a preview for an upcoming issue at a team meeting, e-mail follow-up to ensure attention, or flagging a new practice through an online training mechanism were examples of instruction used to enable and verify expectations regarding infection prevention. According to participants, team huddles, one-to-one sessions, personalized e-mail, communication memos, posted fact sheets, or reference sheets also assisted as methods to support and verify expectations. In their responses, participants inferred that the level, intensity, and mechanisms of communication were dependent on the importance of the communication and how much skill or clinical process change was needed by front-line staff.

***Visual aids.*** To integrate information to front-line workers, participants also suggested dependence on visual aids such as handwashing posters, step-by-step process explanations (often by email) and the use of charts in high-traffic areas, like handwashing stations, to emphasize expectations. Memos to families and adding messages to unique places like toilet stalls or customized communications, such as the ‘bug of the month,’ helped to align expectations. As the above paragraphs suggest, gaining worker focus and attention through visual aids was a significant leadership investment that created success in practice change.

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## ***Observations and Implications***

***Observations.*** As a feature of interview results, descriptions of diverse communication tactics and visual aids emphasized the efforts participants undertook to ensure that important messages and instructions caught the attention of frontline staff. Verbal communication, electronic communication, and visual aids are used based on the importance and complexity of the message.

***Implications for the research question.*** The results imply that LTC home leaders must use diverse communication tactics to help drive evidence-based practice adoption and maintenance. Trialling diverse communication tools as well as visual aids and then adapting them to the local context is an important consideration.

Table 45 provides a snapshot of the codes identified by participants for the subtheme.

***Table 46***

*Use of Diverse Communication Tactics*

<b>Sub Theme</b>	<b>Dominant Codes</b>	<b>Sample Reference Codes</b>
Use of Diverse Communication Tactics	Supportive communication methods	<ul style="list-style-type: none"><li>• Verbal opportunity to prepare staff for what is coming at a team meeting, monthly team meetings, expectations, and online training</li><li>• Huddle, one-to-one, communication memo, posted fact sheet, reference sheet</li><li>• Communication depends on the level of importance and how much skill or clinical change is needed by front-line staff</li><li>• e-mail – to describe when and how</li><li>• memos to families and elders</li><li>• ‘Bug of the month’</li></ul>
	Visual aids	<ul style="list-style-type: none"><li>• Handwashing posters, step-by-step processes and charts in high-traffic areas like handwashing stations</li><li>• Back of the door or the toilet stall</li></ul>

Note. The above table was synthesized from the responses of participants 1,2,4,6,8,10,11,14,15,& 17 (Source NVivo 15)

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### ***Subtheme - Cognitive Aids***

To attract and maintain ongoing worker attention, the use of cognitive aids was distilled as an important approach to sustaining best practice implementation.

***Signage.*** Signage was frequently discussed by participants as a key mechanism in their leadership toolkit. Uniquely coloured signs on the outside of a resident's door and then inside the resident's door were used to consciously and continually draw workers' attention to a unique initiative, especially when there was no room for error, such as the delivery of medications. As cognitive aids, posters were used in places such as the lunchroom where front-line workers' attention was focused on how to handwash, hold your cough, and where and when to wear a mask. Colour signage systems were also utilized to help differentiate practice choices, such as yellow colouring for dirty laundry linen and red labelling for cytotoxic disposition.

***Quick reference cards.*** Participants relayed that quick reference cards were also widely used as cognitive mechanisms to grasp attention. Quick reference cards would be located throughout the LTC home and the information in the reference cards would be very clear about behaviour or process expectations. Reference cards would be linked to reference sheets, or fact sheets, that helped to summarize new infection prevention guidelines. As per the participants, the reference cards could also be linked to an algorithm for staff to follow.

***Electronic learning modules.*** Electronic learning modules were also referenced by participants as another vehicle related to attracting the attention of front-line workers. A particular application used in some LTC homes, Surge Learning, provided prepackaged learning modules to supplement infection prevention guidelines. These tools had video excerpts to help demonstrate a practice execution, or the tool could be used as a formal infection control course

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that would be done online. Participants suggested that video presentations seemed to better connect to front-line workers' memory and dynamic recall, rather than reading policies.

***Risk indicator sheets.*** Risk indicator sheets were also referenced by participants as a means to attract focused attention. These sheets were point-of-care risk assessment tools that acted as reminders that a new, unique and important action was required by the worker in the care of residents. Risk indicator sheets would often be laminated at a resident door, and, act as an automatic trigger, to know there is something unique ahead, to stop, and to reflect on what is needed, such as the use of special PPE. Participant 19 observed regarding risk indicator sheets:

“Whoever is in isolation, what it is that you need to wear pictures, I find are a lot better. We also have to identify for all the staff, like your dietary, housekeeping and laundry. I have little red dots, so red dots on the person’s name indicate that you are going to have to use you PPE for that particular person.”

***Lanyards.*** Participants also spoke of the use of lanyards as cognitive aids with concise messages as a specific tool to help staff remember to do unique actions in the care process. Lanyard messages would help to drive behaviour by having the front-line worker remember a special action triggered by a simple message at a specific moment in time.

***Infectious disease kits.*** As a cognitive aid, participants identified the use of infectious disease kits as a predeveloped kit for anticipated diseases (e.g., airborne or gastrointestinal infections). These kits would include signs, therapy bundles, checklists, and other tools unique to the infectious issue, as well as a rapid enabling mechanism for deployment.

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## ***Observations and Implications***

***Observations.*** As the above evidence suggests, cognitive tools that enable the retrieval of prior learning is a significant mechanism for encouraging best practices. The use of cognitive aids appeared as a well-developed set of tactical mechanisms experienced by participants. The emphasis on signage, quick-reference cards, and electronic learning modules was broadly described, while the attention to risk indicator sheets and infectious disease kits was viewed as a unique adaptation by a subset of the participants. In summary, the common theme is attracting as well as maintaining conscious deliberation, and participants emphasized the importance of cognitive aids in accomplishing this aim.

***Implications for the research question.*** Leadership's attention to the use of cognitive aids gives the leaders leverageable tools to help staff embrace best practices. The cognitive aids also help staff to execute best practices. A sharing of these tools amongst sector participants would help with rapid deployment and comprehensiveness in approaches to challenging infection events.

Table 46 provides a snapshot of the codes identified by participants for the subtheme.

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**Table 47**

## *Cognitive Aids*

<b>Sub Theme</b>	<b>Dominant Codes</b>	<b>Sample Reference Codes</b>
Cognitive Aids	Signage	<ul style="list-style-type: none"> <li>Coloured signage</li> <li>Outside door</li> <li>No room for error even when delivering meds</li> <li>Signs for the main door</li> <li>Poster in lunchroom- how to handwash, hold your cough, where to wear a mask</li> <li>Colour system – yellow for laundry linen, red label for cytotoxic</li> </ul>
	Quick reference cards	<ul style="list-style-type: none"> <li>Quick reference cards all around the LTC home</li> <li>Very clear about what expectations are</li> <li>Reference sheets, fact sheets</li> <li>Algorithm to follow</li> </ul>
	Electronic learning modules	<ul style="list-style-type: none"> <li>Surge learning</li> <li>Videos</li> <li>Let them know right away, and then they can watch a video or do a course online</li> <li>Videos to connect to memory better than reading policies</li> </ul>
	Risk indicator sheet	<ul style="list-style-type: none"> <li>Point of care risk assessment reminder – laminated at every door that you need to use PPE</li> <li>Automatic trigger – knows something is there – stops and triggers them to see</li> </ul>
	Lanyards for memory aids	<ul style="list-style-type: none"> <li>Help staff remember, for a specific moment</li> <li>Simple reminder tools</li> </ul>
	Infectious disease kit	<ul style="list-style-type: none"> <li>Kit for infectious diseases – whether airborne or gastro (signs, bundles, checklists)</li> </ul>

Note. The above table was synthesized from the responses of participants 1,2,3,4,5,6,7,8,9,10,11,12,13,15,16,17,18,19,20 (Source NVivo 15)

## *Subtheme - Purposeful Communication Tactics*

Specialized communication efforts directed at a unique problem were an insight gleaned from the research participants. Purposeful is a keyword, as the concept of how and why needs to be addressed to gain traction on a new planned behaviour. The participants provided several ideas worth exploring.

**E-mail newsletters.** In the participants' aggregated response to the research questions, the email of a focused newsletter was described as a useful mechanism for grasping and holding front-line worker attention. A monthly newsletter was used to highlight reminders of best

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practices, the implementation of new practices or supply information to keep workers in the loop on an initiative. Organizational email messages about who is infected, who is awaiting a swab, or approximately when the nursing unit will get out of the outbreak were all means of communication to obtain and retain the focus of front-line workers. As participant 20 stated, in response to using emails and newsletters, “Just keep reminding them the importance. I think giving them the data is important.”

***Fun interactions.*** A unique message from selected participants was to draw attention to new behaviour expectations through communication mechanisms that were interactive and fun for staff to observe. YouTube videos that feature famous rappers singing about infectious organisms such as C. difficile, or starting an information session with a fun activity, helped to achieve better interaction and engagement amongst front-line staff. Background music that stimulated attention and interactive demonstrations at staff meetings helped to prevent information exchange from being stale. As per a participant, one strategy was to use a fun song as background, then do something intentionally wrong for illustrative purposes, and then do it right as a tactic that helped attain an increased attention span. Participant 16 stated: “In the past, we had done a Jeopardy Game. It worked pretty good.” And “we had a dress-up day for superheroes. The staff could actually dress up like superheroes. Combat the infection is the idea.”

Creating and assigning an infection prevention video retrospectively on the application Surge Learning was used as a further means to guide attention as staff were watching someone they knew (including comedians). One participant also described using the LTC home’s housekeeping service and involving them by showing humorous ways to clean a room correctly. People’s attention was drawn and sustained to a familiar face on a video.

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***Communication as a Routine.*** Developing the routine of regular communication expectations during an outbreak was also a notable purpose-driven tactic described by participants. This tactic included a regular memo at the same time every week during an outbreak event, such that staff would have an expectation developed for an imminent knowledge insight. Participant 10 shared: “When we had to introduce new things and, like through Covid, it was every Friday a new memo right at 5 o’clock in the evening to get it started.”

***Documentation for surveillance.*** Finally, a participant spoke of live or just-in-time documentation for surveillance as a means to sustain attention. Through the use of live Excel spreadsheets, all surveillance measures would be available at any time for staff to review. Essentially, any staff member could document coming across an infection or noting a precaution for general awareness. These tools would let the whole organization know when an outbreak started, was resolved, and what the outcomes were.

### ***Observations and Implications***

***Observations.*** Assertive communication initiatives appear to coalesce through the participants' responses around the concept of purposeful problem-oriented communications. Getting to the heart of the issue, with a vision of the desired practice intervention, appears as a subtext for the communication tactics shared by participants. Awareness and conscious connection with frontline workers is key.

***Implications for the research question.*** This insightful subtheme was a direct line of thinking for the response to the ‘how’ to spread best practices. As the narrative above suggests, communicating with clear, purposeful intent is an enabler to gaining front-line worker

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compliance with best practices. The participants leaned on the creativity and the adaptability of the leadership to reach a practice implementation through a focus on the desired behaviour.

Table 47 synthesizes the coded reflections of the participants on the subtheme.

**Table 48**

### *Purposeful Communication Tactics*

<b>Sub Theme</b>	<b>Dominant Codes</b>	<b>Sample Reference Codes</b>
Purposeful Communication Tactics	Email of newsletter	<ul style="list-style-type: none"><li>• Monthly reminder of best practices, implementing new practices, and information to keep awareness</li><li>• Email about who is infectious, or awaiting a swab, or approximately when they will get out of the outbreak.</li></ul>
	Interactive and Fun	<ul style="list-style-type: none"><li>• Fun and interactive to grasp attention – YouTube video parodies – rapping about C Deficile</li><li>• Start the session with a fun infection prevention activity</li><li>• Fun gets better interaction and engagement</li><li>• Interactive put on N95s – demonstrate at staff meeting</li><li>• Fun song, do something wrong ...then do it right – assigned on surge learning – education with someone you know</li><li>• Housekeeper involved – how to clean a room right – involved on TV</li></ul>
	Broad communication to families	<ul style="list-style-type: none"><li>• If going into an outbreak, all staff and families are notified – automatic service</li><li>• Communication with families of outbreaks, big or small – then only allow essential caregivers</li></ul>
	Live Document for Surveillance	<ul style="list-style-type: none"><li>• Live Excel spreadsheet – document all surveillance measures – not on paper</li><li>• All reports – staff can record if they come across an infection or precaution</li><li>• Know when it started, resolved, and what outcomes were – just support staff</li></ul>
	Electronic reminder	<ul style="list-style-type: none"><li>• Remind about audits</li></ul>

Note. The above table was synthesized from the responses of participants 1,4,5,6,7,12,13,15,& 16 (Source NVivo 15)

***Significance of the Theme.*** Keeping workers informed and engaged is no small task.

Though there is no magic bullet in gaining and maintaining worker attention, this theme implies an adaptiveness to a suite of mechanisms, like those identified in the participant responses, that help create the motivation to pull workers and the organization toward a common vision. Further,

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the inherent trial and error utilized by leaders to gain worker attention is akin to the learning organization or the implementation science perspective.

### ***Theme – Reflecting and Reinforcing***

The narrative below synthesizes participant responses into the theme Reflecting and Reinforcing, which characterizes the implementation of infection prevention best practice as a tactical process that involves pausing, observing results, and developing next steps. Although Plan-Do-Check-Act (PDCA) is a common verbiage in the healthcare quality improvement literature, as articulated by interview participants, the focus on reflection and reinforcement is observed as an additional important activity that is incremental, methodical, and ultimately sustainable. This theme is defined as *a mental model centred on the execution, review, sustainability, and ongoing reinforcement of a cadre of critical actions or task-based elements linked to a tangible objective*.

#### ***Subtheme - Review, Analysis and Reflection***

Participants expressed success in implementation that was linked to observation and the detailed analysis of a planned action. The Subtheme Review, Analysis and Reflection was distilled from participant responses.

***Public Health Recommendations.*** Triggered by public health unit recommendations, the review and audit of practice compliance created a framework of actions that facilitated the implementation of new practices. Participants also commented that it was important that Public Health Unit recommendations were initiated, communicated, and presented in a language that was nonpunitive and nonjudgmental. Similarly, the public health unit inspection event would

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give a rationale as a key step to reinforce trust and reinforce evidence to support a change process.

***Audit and Incident Tracking.*** Mini audit applications or ‘Speedy Audits’ for compliance were also a quick, easy action to capture and correct a missed moment of hand hygiene or a practice error. Participants' personal experiences identified that direct engagement approaches from audits, which solicited workforce reflection and feedback, were important. If an initiative is not working, a timely recommendation would be generated, as would asking staff for feedback as to what would work better. Participant 11 summarized the implementation interaction with workers and gave insight into the iterative approach of the LTC environment:

My team is very good at letting me know what works and what doesn't and just working through the issues at hand really inspires us to make those decisions together” and “with the routines, the hours of work, its not always something small that we can fix, but looking at the bigger picture and breaking down, how are we going to get this compliance?” so “ its really about understanding what works, what doesn't. How can we connect? Is it a job routine? Is it a visual aid?

***Surveillance.*** Reflection and analysis were also reinforced through the examination of surveillance data. Review of infection rates and absences, calibrated to a nursing unit, helped identify where compliance was waning and needed attention. As mentioned earlier, surveillance also helped identify systemic risk mitigation strategies, such as placing a returning resident from the hospital into temporary isolation to protect other residents in the LTC home community from infection.

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**Positive Feedback.** Participants messaged that the use of positive feedback was also important as a means to link staff adherence to a skill or to reinforce a specific skill, while recognizing that perfection is impossible to expect. Linking and applying feedback to highly leverageable skills supported sustaining the skills over the longer term.

**The Leadership Team Role.** The review, analysis and reflection subtheme included the use of the LTC home leadership team and this team's key role regarding reviewing surveillance data and audit data. The leadership team would review data, determine discrepancies, and work with stakeholders to find strategies for improvement.

### ***Observations and Implications***

**Observations.** Reviewing, analyzing and reflecting on public health unit recommendations as an anchor for audits, surveillance and positive feedback opportunities appeared as an integrated mechanism for reinforcing the implementation of best practices. Using audits and data as an objective baseline for attention and improvement appeared as a significant insight. Essentially, the initiative seeks to know, was the new behaviour applied, and if it is working.

**Implications for the research question.** Audits, surveillance, and the opportunity for feedback help address how to implement, modify, and sustain best practices. Leadership teams are well-positioned to use this information to drive change. Leadership teams must build into their schedules time for reflection on results, as well as reinforcing desired behaviours, in order to protect residents from infection over the long term.

Table 48 below provides a summary of the data collected from participants for the subtheme.

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**Table 49**

### *Review, Analysis, and Reflection*

<b>Subtheme</b>	<b>Dominant Codes</b>	<b>Sample Reference Codes</b>
Review, Analysis and Reflection	Public Health Recommendations	<ul style="list-style-type: none"> <li>• Source for conducting audits and implementing practice – non-judgmental</li> <li>• Public health attend and give rational, reinforce trust, and provide evidence to support change</li> </ul>
	Audit and incident tracking	<ul style="list-style-type: none"> <li>• Speedy audit application</li> <li>• Missed moment of hand hygiene or error</li> <li>• Routine audits, incident tracking, and follow-up</li> <li>• Monthly audit – What was done right? Done wrong?</li> <li>• Tabulated results for the IPAC committee</li> <li>• When non-compliance occurs, develop action plans and patient education as needed</li> <li>• Use modified duties staff – different points of view, auditing</li> <li>• Share audits at neighbourhood meetings</li> <li>• Two homes compare results and incident tracking</li> </ul>
	Surveillance	<ul style="list-style-type: none"> <li>• Infection rates and absences</li> <li>• Quarterly tracking reports</li> <li>• Lead gathers stats – where compliant, where infection, where seeing this, why seeing this more than in one neighbourhood</li> <li>• See when someone comes from the hospital – put in isolation – came from analysis trend</li> </ul>
	See if it's working	<ul style="list-style-type: none"> <li>• Go out and evaluate if it is working</li> <li>• Is the change we observe the change we like?</li> <li>• Staff feedback on did it work</li> </ul>
	Positive Feedback	<ul style="list-style-type: none"> <li>• Linked to staff adherence, compliance culture</li> <li>• Positive reinforcement of specific skills</li> </ul>
	Leadership Team Review	<ul style="list-style-type: none"> <li>• Look at a year's worth of audit</li> <li>• Discrepancies ...find strategies for improvement</li> <li>• Brainstorm ideas with other LTC homes</li> <li>• Review results as a team to enhance comprehension</li> </ul>

Note. The above table was synthesized from the responses of participants 1,4,6,7,10,12,13,19,& 20 (Source NVivo 15)

### ***Subtheme – Evaluation***

Formal evaluation is a concept used to enable an examination of the current state of practice behaviours versus the desired state of practice behaviours. Participants provided insights for evaluation.

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***Time for Reflection.*** Participants spoke of needing a set time for reflection or scheduling the proper time to learn something, especially in the review of audits and tracking trends, as a means to refocus attention on best practices implementation. In assessing the level of compliance and non-compliance from the review of audits, from tracking trends, and from action plans review, resident education materials and staff education materials were developed and revised as needed. As an illustration, participant 17 stated:

So, I do audits and then if someone fails the audit, we do education in the moment and then I hand them a pamphlet like an education pamphlet. So, on-the-spot education. And then they can review it, and then I will follow up with them.

***Constant evaluation.*** Constant evaluation to regularly keep a new desired practice top of mind was also important. Participant 7 reflected, “We do daily outbreak meetings when there is an outbreak, investigate the causes, how its spreading, and we work closely with our public health unit to go through what might be happening.” Participants spoke of adequate time for evaluation as a critical element for practice improvement, especially the time to study updates and have proper discussion of an issue that emerged from the evaluation.

Participants identified a continual planned effort to evaluate, and as a means to stay on top of the changing work context and the need to plan to go and chat with staff individually to stay ahead of issues. Of interest was the need to be adaptive in the worker interactions.

Participant 18 expanded on this observation:

With PPE donning and doffing, I found it very successful to have more interaction with the staff, especially when we are learning about the N95 mask and how to wear them correctly. I would have them tell me what I needed to put on next. And then I would start

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to don or doff something where I touch my mask or put my N95 on upside down. I'd wait for someone to say, well, that's not right, ok. So you caught that I did that wrong. So it was a little bit of fun with trickery and having that interaction and interactive demonstration.

***Assertive Auditing for Change.*** Finally, an insightful application of an implementation process was to evaluate and audit frequently and assertively to drive, with purpose, a desired behaviour. This intentional, highly focused activity helped develop constant attention on a desired behaviour change, critical to best practices implementation and ongoing maintenance.

### ***Observations and Implications***

***Observations.*** As distilled from participant remarks, a commitment to evaluation enables a LTC organization to prepare for variation in an implementation process, enable an organization to learn from an experience, and then make adjustments. Review, adjustment, reflection and evaluation are powerful activities that, if done effectively, can enable best practices and promote superior resident outcomes.

***Implications for the research question.*** To help improve frontline workers' practice, leaders must take the time and schedule an evaluation to maximize benefits for the implementation process. Though difficult to do in a dynamic LTC environment, it appears as a critical success factor for enabling best practices over the long term.

Table 49 provides a summary of the data collected from participants for this subtheme.

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**Table 50**

## *Evaluation*

Subtheme	Dominant Codes	Sample Reference Codes
Evaluation	Time for reflection	<ul style="list-style-type: none"><li>• Proper time to learn something</li><li>• Audits, tracking trends – new culture on focusing on best practice</li></ul>
	Constant Evaluation	<ul style="list-style-type: none"><li>• Has to be followed to see if effective – ensure practice followed</li></ul>
	Top of mind	<ul style="list-style-type: none"><li>• Keep at top of mind</li></ul>
	Audit for change	<ul style="list-style-type: none"><li>• Audit for change with purpose</li></ul>

Note. The above table was synthesized from the responses of participants 1,6,7,& 9 (Source NVivo 15)

## **Significance of the Theme.**

This theme implies that the frontline workers' conscious attention to best practice achievement requires a dedication to reviewing, reflecting, analyzing, and evaluating participants' behaviours and actions. As led by leadership teams, surveillance, auditing and providing timely feedback appear as critical success factors in achieving success. Creating a disciplined approach to reflecting and reinforcing desired behaviours helps to deliver on the objective of effectiveness in ensuring best practice guidelines have their intended effect.

## **Why is this dimension relevant to the research question?**

Returning to the football analogy, if a team is behind at halftime of a game, the coaching staff must urgently return the players' attention to the game plan and reinforce the details of winning actions. The time horizon in a LTC home is also dynamic, especially during an outbreak. Due to the magnitude of the situation, workers' attention to infection prevention details could be suspect, and leaders must regain the attention and reinforce the desired activities going forward. In essence, leadership must be prepared for barriers and setbacks. Developing a focus or mechanism to take retake frontline workers' conscious attention and reinforce desired behaviour is the intention and the advice provided by this dimension.

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To conclude, chapter five analyzed participant observations that synthesized the normative dimensions of 1) leadership qualities and frameworks, 2) knowledge, skills, and capabilities development, 3) tactical planning, and 4) a focus on worker attention and reinforcement of practice intentions. These conceptual normative dimensions act as a practical framework for best practice implementation in LTC homes and are expanded through the following eight themes or critical factors: leadership activation drivers, functional roles and supporting entities, competency development strategies, achieving compliance, dissemination mechanisms, contingency development, alerting worker attention, and reflection and reinforcement. These elements form the background and context of the following chapter, Chapter Six: Discussion.

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## Chapter Six: Discussion

### Introduction

This dissertation makes several unique contributions to management practices in the LTC sector, as well as an understanding of the implementation and change management mechanisms that enhance infection prevention practices. Evidence of additional critical factors, as implementation-related themes, emerged from participants' data. Giving license to an implementation science approach, the critical factors include 1) leadership activation drivers, 2) functional roles and supports, 3) competency development strategies, 4) achieving compliance, 5) dissemination mechanisms, 6) contingency planning, 7) alerting worker attention, as well as 8) reflection and reinforcement. As a contribution to existing knowledge, each of these critical factors can be considered vital in the planning and implementation of LTC home best practices.

This dissertation also uniquely contributes increased consideration to the distinct working context of LTC homes (e.g., maintaining a homelike environment, the nature of the resident population), the LTC home workforce implications (e.g., use of adult learning principles, addressing worker attitudes), an emphasis on tactical planning (e.g., mitigating risks, mitigating physical plant deficiencies), and the need for relentless or dogged attention (e.g., signage, audits) to workforce practice compliance.

Looking ahead, this chapter provides a brief background to this dissertation, summarizes the findings from the research questions (organized by normative dimensions), a discussion of unexpected findings, departures from the literature, and the findings alignment with NPT as well as Implementation Science. Finally, the chapter closes with the implications for practice improvement as well as a blueprint of activities for best practice implementation, study limitations, and thoughts on future research.

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## Background

My research experience began with shocking observations related to the significant negative impact of COVID-19 on LTC homes (e.g. deaths, hospitalizations, comorbidities, etc.). Consequently, this phenomenon led to my interest in the change management processes for integrating infection prevention best practices as a means to address the negative impact of LTC home infectious disease outbreaks. Specifically, from an implementation science perspective, I was curious about how LTC leaders influenced the practices of their front-line workers to implement infection prevention best practices for transmissible airborne diseases. Furthermore, drawing on my interest and personal reliance on project management approaches, I believe that the intersection of a ‘people-centred change approach’ and a structured ‘project management approach’ is fundamental to achieving effective delivery of infection control best practices (Brydges and Brydges, 2016).

As I worked through the literature review process and began to generate conceptual ideas referred to as normative framework dimensions, I identified three key dimensions: structural, procedural and interpersonal. Structural dimensions were labelled as formative, functional and architectural traits. Procedural tasks were characterized by process-driven, action-based and stepwise-oriented attention traits. Interpersonal dimensions were labelled as social and relationship-oriented traits. Eleven critical implementation factors were synthesized from the literature and aligned with the normative dimensions. The normative dimensions and critical factors are displayed in Table 50.

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**Table 51**

*Normative Dimensions and Critical Factors gleaned from the Literature*

<b>Structural Dimension</b>	<b>Procedural Dimensions</b>	<b>Interpersonal Dimension</b>
Characterized by formational, functional and architectural traits	Characterized by its process-driven, action-based, and stepwise attributes	Characterized by social and relationship-oriented traits
<p>Critical Implementation Factors</p> <ul style="list-style-type: none"> <li>• Collective Learning</li> <li>• Individual Learning</li> <li>• Cognitive Aids</li> <li>• Organizational Routines</li> </ul>	<p>Critical Implementation Factors</p> <ul style="list-style-type: none"> <li>• Measurement and Transparency</li> <li>• Quality Activities</li> <li>• Team Competency Development</li> </ul>	<p>Critical Implementation Factors</p> <ul style="list-style-type: none"> <li>• Patient Experience</li> <li>• Psychological Safety</li> <li>• Leadership</li> <li>• Culture</li> </ul>

To explore my research interest further, my efforts were anchored to the research question “How are evidence-based infection prevention best practices for transmissible airborne diseases prospectively implemented by leadership into front-line LTC home workers' practices?” Said in another way “How do LTC home leaders and their organizations help frontline workers use evidence-based practices to prevent the spread of airborne infections?” These research questions shaped an empirical exploration of what themes or critical factors enable the implementation of infection prevention best practices into frontline LTC home workers' resident routines.

Targeting leaders in a selection of LTC homes in Southwestern Ontario, research questions were developed that were designed to extract themes or critical factors concerning:

- The change strategies used to introduce new evidence-informed guidelines.
- The leaders' facilitation abilities to implement change.
- The mechanisms and tools used to implement change.
- Sustaining and standardization of change.

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## Key Findings Generated from the Research Questions

The twenty participants with LTC home experience interviewed in this study provided a rich array of information and practical experiences that significantly advanced implementation mechanisms to enable the integration of best practices into front-line workers' practice behaviours. The outputs from the research findings generated the following normative dimensions and themes, as critical factors, to facilitate best practices guidelines into front-line workers' behaviours.

### ***Normative dimension: Leadership Qualities and Frameworks***

***Theme - Leadership Activation Drivers*** are defined as *a purposeful engagement and a deliberate mechanism to enable the effectiveness of employees in consistently and reliably delivering best practices*. The theme is illustrated through activities that encourage leadership engagement and address leadership effectiveness.

***Theme - Functional Roles and Supporting Entities*** are defined as *a focused entity or group tasked with addressing and advising a specific problem, issue, or practice gap in the LTC home work environment*. The theme is illustrated through the creation of focused and accountable roles, advisory bodies, and engagement with community sector partners.

### ***Normative dimension: Knowledge, Skills and Capabilities Advancement***

***Theme - Developing Competencies*** is defined as *a conscious activity by LTC homes to generate effective practices, skills, and routines in their workforce's experience to appropriately respond to an infection prevention challenge*. The theme is illustrated through focused instruction, educational aids, and teachback activities that prepare a frontline worker for proficiency.

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**Theme - Achieving Compliance** is defined as *a structural or framework-oriented system that LTC homes have advanced to implement, compel, and ensure the sustainability of new, effective practices.* The theme is illustrated through the development of an infection control culture, using constructive feedback and internal mentorship to enable personal and team mastery.

### **Normative Dimension: Tactical Planning**

**Theme - Dissemination Methods or Activities** are defined as *a structured spread of evidence through analysis, action planning, policy adjustment, and meeting approaches.* The theme is illustrated through the development of a leadership group, project plans, and huddles that advance a practice objective.

**Theme - Contingency Development Activities** are defined as *a systematic planning approach to addressing risks that first identifies the risks and then requires the relentless pursuit of mitigations or proactive activities.* The theme is illustrated through addressing physical plant deficiencies, resource limitations, resident dynamics and a treatment philosophy that may impede best practice effectiveness.

### **Normative Dimension: Attention and Reinforcement**

**Theme - Alerting Worker Awareness** is defined as *the mechanisms for the advancement of the front-line workers' attention or mindfulness in choosing a desired effective behaviour at a critical moment in the care process.* The theme is illustrated through diverse communication tactics such as the use of visual aids, cognitive aids, and fun interactions that seize worker attention.

**Theme - Reflection and Reinforcement** is defined as *a mental model centred on the execution, review, sustainability, and ongoing advancement of a cadre of critical actions or task-*

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*based elements linked to a tangible objective.* The theme is realized through data surveillance activities, audits, assertive audits, and evaluation.

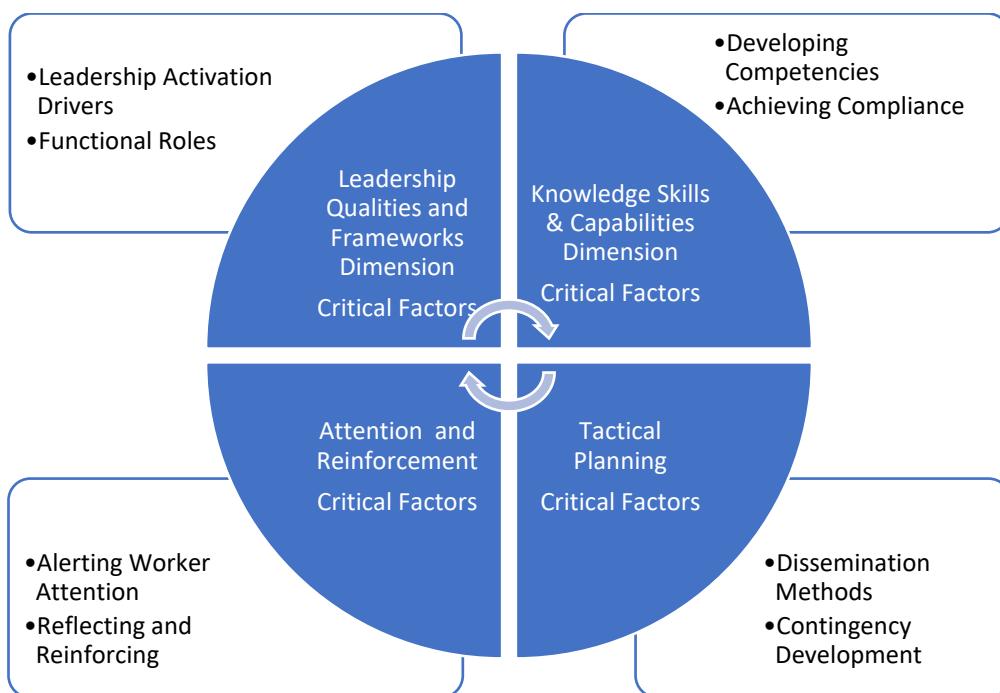
To complement the above synthesis, Appendix I provides a brief synopsis of the aggregated responses of the participants for each of the seven research questions developed for this study. Further, Appendix J summarizes each theme or critical factor, and Appendix J provides recommendations for the potential use of the theme or critical factors.

### ***Conceptual Model for Implementation or Change Management Considerations.***

Figure 3 presents my research findings in a simple conceptual model or blueprint that connects the normative dimensions to the derived themes or critical factors. As a mental shortcut, the model represents the building blocks of a mechanism to enhance change management activities linked to best practice implementation in LTC homes.

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**Figure 3 Normative Dimensions and Critical Factors (Themes)**



## Unexpected Findings

Given the depth of the qualitative analysis process, several unexpected nuggets of knowledge or findings were presented by participants' responses as insights into the implementation of best practices. These significant insights are provocative and help to further possible actions leaders can take when planning for change management and implementation initiatives. Several unique findings stood out, as described below.

### **Unique Finding – The impact of LTC facilities as a home rather than an institution.**

In contrast to acute care facilities, LTC homes are designed to be homelike environments rather than operated as institutional care facilities. A key insight from the interview participants was the tension between maintaining and ensuring infection prevention rigour while preserving the sense of a home environment for residents. In contrast to an acute care facility, this tension

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created a constant need for innovation as well as socio-adaptive strategies to balance safety, quality, resident experience, and resident dignity. Further, creating a homelike environment can create additional risks not anticipated by best practice standards (e.g., dementia residents wandering a resident hallway). Hence, the need for adaptive ideas and innovation was a critical insight required to balance what can appear as competing operating objectives.

### ***Unique Finding – A focus on adult learning principles.***

The characteristics of the employee population of LTC homes is unique compared to other complex healthcare institutions, such as hospitals. Employees may have less formal education, may be re-entering the LTC workforce, or may be ethnically diverse (e.g., recent immigrants employed as PSWs).

Significant feedback from participants drew attention to the nature of knowledge transfer tactics for adult learners. Hence, participants emphasized the importance of adult learning principles. This included the experience of participants simplifying training into digestible steps, addressing language and comprehension barriers, and incorporating teach back methods to ensure knowledge retention. These insights suggest that one-size-fits-all education models may be ineffective in the LTC workforce context and may be unique from the experience of acute care settings.

### ***Unique Finding - Compliance slippage – dwindling attention.***

Though interpersonal compliance variation may be found throughout the healthcare work environment, participants signalled special attention to compliance slippage because of employee overload, exhaustion, being too busy because of staff shortages, or an inappropriate understanding of *the why* of a process. As LTC home residents are especially vulnerable due to their age and comorbidities, participants reinforced the need to stay on top of practice execution.

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Therefore, in order to focus workforce attention on sustained best practice, leaders need to monitor practice compliance through visible leadership, audits, walkthroughs, evaluations, and continual infection surveillance.

### ***Unique Finding – The attitude of workers.***

The impact of the attitudes of LTC workers was an important finding stressed by a significant proportion of participants. Vaccine hesitancy, employees tired of masking, the spread of misinformation, and less employee conviction in infection prevention implementation, as fewer deaths occurred, were surprising insights. Therefore, leaders continually need to find ways to explore and address the perception of their workers to combat the above headwinds. Thus, constant encouragement, ongoing education and an emphasis on *the why* are important considerations that appeared unique for LTC home leaders.

### ***Unique Finding - Tactical rather than memo-based transactions.***

An observation from participants was that information comes in the form of standards and formal directions; however, little system-wide emphasis is placed on the tactics or how to implement the standards. This insight adds to the relevance and the urgency of my research work, as the qualitative approach that I used in this study provides insights into the mechanisms or tactics used to implement best practice standards and directives.

To summarize this section, recognizing LTC homes as homelike environments, an emphasis on adult learning principles, compliance slippage from dwindling attention, the attitude of workers, and the need for tactical approaches emphasized the unique nature of implementing best practices in the LTC home sector, and emphasized an urgency and a level of risk that was not evident in the literature. These findings clearly reinforce the unique risks that need to be

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addressed through careful planning and effective execution, which are aided by the narrative dimensions and critical factors developed in this discussion and demonstrated in Figure 3.

### Promising Practices

Several promising practices emerged from this research for LTC home leaders to consider during the planning of implementation.

1. A major practice considered was to advance efforts to curate and simplify the dissemination of infection control standards. Participants indicated that staff are overwhelmed with information and, as a result, a leader must focus messaging for optimum benefit.
2. Another promising practice was to use signage and cognitive aids to alert workers and continually direct their behavioural choices to a desired standard.
3. Attention to adult learning principles is a core practice of interest. Breaking desired behaviour into manageable pieces is a key reflection for consideration by leaders.
4. Making learning fun was a notable practice of interest. Participants described that fun videos with a homemade context helped drive practice attention.
5. A further practice of interest was to have the worker teach back the skill to the educator. This insight was especially powerful as it gave the instructor an opportunity for immediate feedback and correction.
6. Huddle, or short, focused multidisciplinary meetings, was a widespread best practice for communication, reinforcement, and an opportunity to simply check in with staff.
7. The use of high-functioning residents to advance and reinforce infection prevention best practices was a promising practice identified by participants. The practice ranged from

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residents providing alcohol scrub to anyone entering a lunchroom to the resident reinforcing proper mask use by workers and caregivers.

8. Demonstrations, especially with tools such as glow germ spray, provided an effective tool for the reinforcement of effective handwashing.
9. A fascinating practice was that of assertive audits to reinforce a desired change. Simply, IPAC leaders would continue with assertive audits on a particular skill at a particular site until the new behaviour was imprinted into the habits of the workforce.
10. Finally, it appeared important for long-term care homes to establish a culture of infection control. Whether it is predominant in measures, meetings, learning, or huddles, embracing infection control through intentional behaviour, and enabling symbolic items (like an infection control cart) also helps to imprint and sustain desired habits into a workforce.

### **Driver Diagrams as a Tool to Facilitate Implementation**

Driver diagrams are an elegant tool that creates a shared mental model between stakeholders. Driver diagrams conceptually connect a desired outcome to the specific measures and actions intended to create results. Figure 4 is a partial representation of a driver diagram for the normative dimension *Knowledge, Skills and Capabilities* associated with the critical factors *Competency Development Strategies and Achieving Compliance*. As an illustration, Figure 4 endeavours to link a desired outcome (e.g., to influence frontline workers' behaviours at the time of patient interactions) to specific actions (e.g., glow germ application, repeat/breakdown task, watch at own pace). The desired outcome is enabled through the catalyst of a critical factor (e.g., competency development strategies) to a primary driver (e.g., focused knowledge and skill development), leading to measures and activities that facilitate the frontline worker's practice.

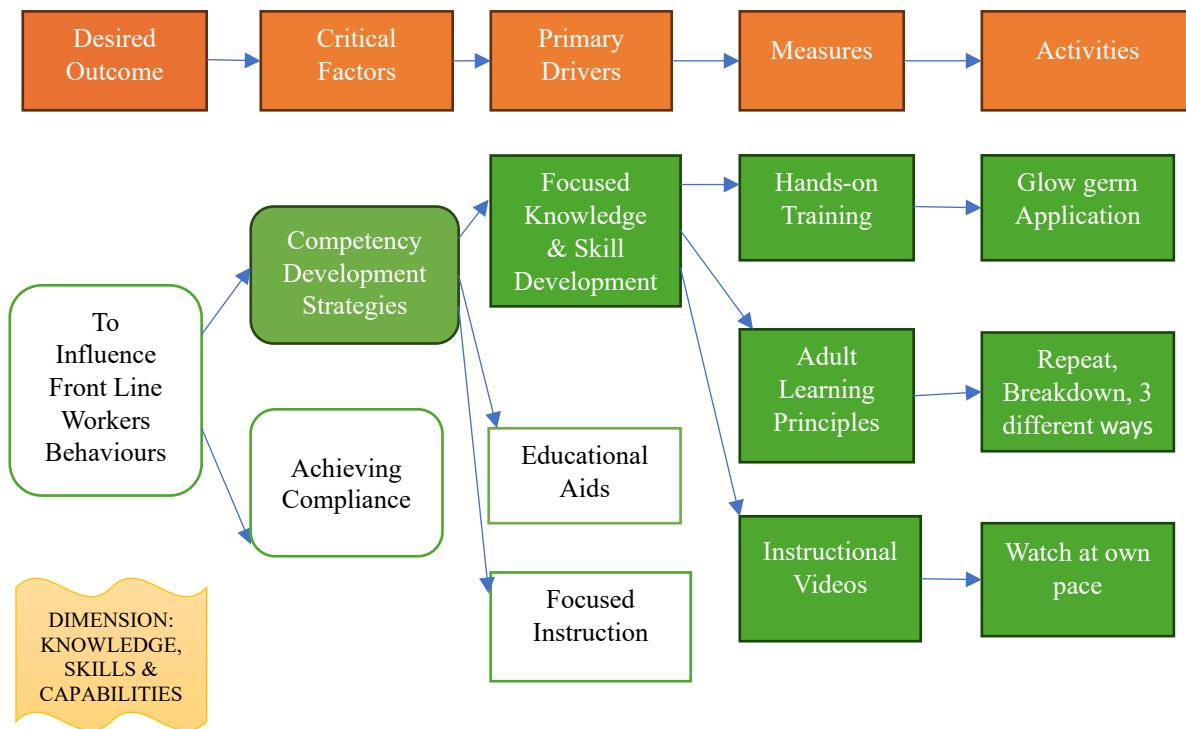
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Driver diagrams for each of the eight critical factors described in this dissertation are illustrated in Appendix M.

The use of the driver diagrams found in the appendix helps to facilitate the creation of a project plan or action plan that guides all levels of leadership, support staff, and frontline workers. The driver diagrams also serve as potential mental shortcuts, acting as a blueprint or playbook to address various situations or contingencies.

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**Figure 4 – Driver Diagram: Desired Outcome, Critical Factors, Drivers, Measures and Activities**



### Departures from the Literature

My findings diverged from the literature in several ways. As mentioned in the previous section, a major difference from the literature compared to my findings emerged in the significant range of identified tactical mechanisms for best practice implementation. This study's findings also varied from the literature in terms of the insights related to an emphasis on systematic compliance. The participants identified significant requirements that were put in place to generate practice compliance (e.g., audits, walking rounds, and teach-back instruction).

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Systemic compliance also arises from the nature of the infection control culture of the organization.

The emphasis and efforts on the development of competency strategies for frontline workers were also insightful and more focused than what was found in the literature. In hindsight, this is justifiable due to the human resources challenges found in local LTC homes and their need to continually train staff who leave LTC after receiving entry-level experience.

A final departure from the literature emerged from the insight of efforts to facilitate frontline worker attention mechanisms, as well as an emphasis on contingency planning. Capturing and sustaining worker attention, planning for barriers, and planning for unexpected risks were fascinating insights.

### **Alignment with Normalization Process Theory and Implementation Science Approaches**

Upon reflection, the findings of this research are significantly aligned with Normalization Process Theory and the advancement of Implementation Science approaches. Recall, Normalization Process Theory addressed the social organization of work (implementation), making improved practice initiatives routine elements of everyday life (embedding), and sustaining embedded practices in the social context (integration) (May & Finch, 2009). May and Finch (2009) proposed that implementation is operationalized through the generative mechanisms of coherence, cognitive participation, collective action and reflexive monitoring. In this study, coherence is exemplified by the use of evidence-based guidelines and structures that enable the evidence-based guidelines to be the source for improvement activities. Cognitive participation was exemplified by collective, individual, and team competency development as well as by the use of cognitive aids. Collective action was exemplified by the roles of teams, huddles, team meetings and the use of champions to enable best practices. Lastly, reflexive

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monitoring was exemplified through the use of audits, walking rounds, quizzes and surveillance activities.

May and Finch (2009) also described a practice being framed through collective action and long interaction chains. The feedback from this study showed examples of collective action through LTC home dissemination structures as well as long interaction chains being established through leadership routines and systematic mechanisms such as huddles, reporting and audits.

This study also aligned with the Implementation Science approach described earlier in this dissertation. Murphy et al. (2012) identified implementation science as “the scientific study of methods to promote the systematic uptake of clinical research findings (and other evidence-based practices) into routine practice and to improve the quality (effectiveness, reliability, safety, appropriateness, equity, efficiency) of health care” (p.302). The study’s findings of methodologically purpose-driven dissemination, development of competency strategies and contingency development efforts are but a few of the mechanisms, as examples, of the alignment of implementation science approaches to this study’s outcomes.

### **Implications of my research for practical and academic knowledge**

The study's findings provided several salient implications for both practical and academic knowledge advancement.

### **Implications for the practice experience**

Several key insights were observed to advance knowledge related to practice improvement in the implementation of best practice guidelines in front-line workers' behaviours:

- The findings from this study suggest that LTC home leaders treat an implementation initiative from a project management perspective. Using a project management

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perspective facilitates objectivity and accountability for the execution of an initiative by clearly determining the roles and responsibilities of key stakeholders. Furthermore, a project management perspective can create a resilient structure to map and disseminate critical information (e.g., leadership teams, infection control teams, peer champions, and IPAC leads) and ensure that critical activities are executed.

- The findings suggest that leaders need to carefully undertake a tactical scan of the operating environment of the LTC home when implementing behaviour changes. This effort includes accounting for the inadequacy of the physical space, the lack of critical and timely resources, the challenges related to the unique characteristics of the LTC resident, and the potential for resident/family pushback to planned initiatives.
- Leaders must identify and develop a consistent mindset that any infection prevention initiatives must align with the context of maintaining a resident's environment that is homelike rather than as an institutional environment. We are reminded that LTC homes are a resident's residence and not a temporary place for health interventions.
- In LTC, leaders must make full use of cognitive aids such as signage, checklists, quick reference cards, infection prevention symbols, and lanyards to align workers' behaviours and workers' practice choices with the intended infection prevention behaviour.
- From a government and policy perspective, funders must direct attention to enabling the spread of tactical or process-oriented recommendations as opposed to directive-based memos and/or recommendations.

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- The findings of this study encourage the enhanced use of audits, feedback, and varied communication strategies as actions LTC homes can evolve and execute to achieve best practice conformance.
- The findings of this study provide insights for IPAC training, infection prevention resource-related policy development, and the enhancement of accreditation standards for LTC homes.

### Implications for Academia

Several key implications were observed through this research for the academic realm:

- The overarching theoretical lens that spurred this research was NPT. Among its many insights, NPT described the major concepts of cognitive participant, collective action, and reflexive monitoring as essential for practice changes (May and Finch, 2009). The concept of cognitive participation was affirmed by research participants through supporting evidence of long interaction chains that were highly focused and included the need to break down activities into digestible pieces for improving front-line workers' perception. The NPT element of collective action was observed by participants as a purposeful investment of group effort or a goal-oriented process by IPAC leaders and IPAC teams to enable change. Reflexive monitoring, or a pattern of reflection on collective action and collective monitoring, was affirmed by participants through evidence regarding the work of infection control teams and IPAC leads as teams dedicated to examining a process or initiative in the pursuit of a change initiative.
- New to academia, this study revealed evidence of unique efforts of LTC home leaders to take and hold the attention of the front-line worker and ensure appropriate workforce

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activities in the critical moments of the care process. This aspect included an attention to the practice detail of the procedure, paying attention to the whole infection control process, and linking a work experience or a signal of variation to a best practice algorithm.

- Further, this study contributes to the change management literature by identifying and reinforcing the need for the relentlessness required to sustain an initiative. Relentlessness in achieving change was evident through a disciplined effort toward continual assertive audits, teach-back sessions, team huddles, surveillance, ongoing testing of workers' skills, learning from peer organizations, and major efforts to combat compliance slip.

Finally, this study contributed to both practice and academia by highlighting the importance of leadership as the glue that maintains the integrity and fidelity of initiatives. This study showed the importance of the power of normative dimensions such as leadership qualities and frameworks; knowledge, skills and capabilities development; pragmatic tactical planning; and attention and reinforcement as the responsibilities of leaders to drive change and conformity. Ultimately, this study revealed that the key challenge is for leaders to penetrate and awaken the conscious executive function of front-line workers' intellectual capacity to guide appropriate infection control choices, or create a cognitive friction for inappropriate choices.

In conclusion, both the literature review and the findings from my empirical research identify LTC homes as a complex environment that requires a systematic planning effort by leadership to ensure best practices are implemented and executed by front-line workers. As leaders develop implementation strategies, the normative domains and critical factors can act as a baseline and as a consideration for a nimble tactical roadmap for a planned or unplanned infection prevention implementation event within their local context.

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### **The Deliverable: A Blueprint for Infection Prevention Best Practices Implementation – A Football Coach Analogy**

This research study began with the research question: “How are evidence-based infection prevention best practices for transmissible airborne diseases prospectively implemented by leadership into front-line LTC home workers' practices?” or “How do LTC home leaders and their organizations help frontline workers use evidence-based practices to prevent the spread of airborne infections?” Based on the literature review and the response of the research participants, the analogy of a football coach offers a blueprint for LTC home leadership to consider in a change management or project management initiative.

Continuing with the football analogy introduced in Chapter Five, if a football coach were hired as a consultant to assist LTC homes with best practice implementation, the football coach would draw upon the normative dimensions and critical factors identified in this research in the following manner.

#### ***Using the Leadership Qualities and Framework Dimension***

In the initial stages of implementation, the football coach, as a consultant, would draw upon the experiences of early-season training camps in order to set the stage for the team's success journey. The football coach would show successes through film, benchmarking against last year's competition, and would even run and work out with the team during practice. This would align with the theme of leadership activation, where a LTC home leader would be advised to engage with staff, role model desired behaviours, give meaning to the efforts, and explain why a new desired action is important.

Further, the football coach would draw upon the practice of having specialty coaches, team captains, and leading players help to enforce the desired execution. This experience would

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align with the theme of Functional Roles and Supporting Entities, where clear roles and responsibilities are established, partnerships are enabled, and communications are advanced through the partnerships and team infrastructure.

### Action Considerations for Leaders for Implementation Initiatives:

- Leaders are recommended to create in their planning process a focus on the drivers of leadership, such as leadership engagement and leadership effectiveness
- Leaders are recommended to focus on utilizing functional roles such as advisory bodies, community sector partners, and IPAC leadership as adjuncts to advance best practices
- Leaders should commit to a principle of psychological safety so workers feel safe in speaking out and taking risks

### ***Using the Knowledge, Skills, and Capabilities Dimension***

A consulting football coach would be aware of the need to develop the skills, the collaboration and the coordination of team efforts through tools such as a playbook, demonstrations, team practice, and coaching feedback. Applied to the LTC sector, focused instruction, teachback, and demonstrations would be encouraged. Achieving compliance would be addressed through reinforcement, the use of enabling tools, and by generating a culture to reinforce infection prevention best practices.

### Action Considerations for Leaders for Implementation Initiatives:

- Leaders are advised to develop competencies through focused instruction and educational aids
- Leaders should consider achieving best practice compliance through enabling tools (e.g. audits) and an enabling culture
- Where possible, leaders can focus efforts on collective learning opportunities through advancing information or understanding in a group
- Leaders may focus on individual learning opportunities by enabling personal motivation for skills development
- Leaders are suggested to focus on a process for team competency development to build a shared vision and cognitive connection within a group

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### *Using the Tactical Planning Dimension*

Football coaches as consultants would come into LTC homes, drawing on their experience in planning and contingency development. Football coaches would disseminate information through team meetings, specialty coaches, speeches, and huddles. This would align with LTC home structures such as staff meetings, neighbourhood meetings, and information huddles. The football coach would also develop actions related to playing in rain, snow, windy conditions, and plays to execute in chosen locations such as the one-yard line or a field goal formation. In LTC homes, the football coach would align advice to mitigate resource implications, building issues, and resident and family dynamics.

Action Considerations for Leaders for Implementation Initiatives:

- Leaders should develop dissemination methods for new information through focused meetings and structured distribution
- As early as possible, leaders should undertake contingency development by planning for physical plant deficiencies, resource deficiencies and unique resident dynamics
- Leaders can focus attention on the creation of organizational routines through processes that use clusters of resources through dynamic interaction
- Leaders should embrace the implementation of quality activities that help determine cause and effect, drivers of change, and an understanding of enabling mechanisms

### *Using the Attention and Reinforcement Dimension*

A football coach would recognize the value of data, time-outs, and replays to capture the attention of his/her players. Coming into a LTC home, the football coach would be cognisant of using measures, the power of brief curated messaging and diverse communications to seize attention. A football coach would follow a game with a debrief, a review of video on isolated performance, and then develop practice schemes to improve on play execution. A football coach would be encouraged by the LTC homes' use of audits, after-action review, and training strategies to improve performance.

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### Action Considerations for Leaders for Implementation:

- Leaders should find mechanisms to seize front-line worker awareness through diverse communication tactics and dynamic cognitive aids
- Leaders can promote reflection and reinforcement through systematic evaluation
- Leaders should focus attention on measurement, and the transparency measurement provides to codify improvements
- Leaders should focus attention on the resident experience, where the resident participates in change through engagement

Overall, the consulting football coach and the LTC leader would share in the activities of implementation and execution of best practices through the development of an education or training plan, the development of strategies to deal with setbacks, engaging in activities to keep the workforce motivated to observe and learn, and finding ways to build resilience to the immediate operating context. The normative dimensions and critical factors, in the spirit of implementation science approaches, assist with addressing a difficult task that requires constant effort and ultimately leads staff to a sense of achievement.

To summarize, this research work alludes and infers that LTC home leadership, stewards of LTC sector policy, government funders, public health units and management training initiatives should embrace these normative dimensions as a blueprint of critical factors that require methodical attention when developing infection prevention implementation strategies. Each of these core activities represents a source for tangible actions that can be aligned within a change management or project implementation. Above all else, these activities enable an improved resident experience through superior outcomes and ensure the resident lives with dignity in the dynamic LTC environment.

### **Study Limitations**

There are five major limitations to acknowledge for this study. First, this study took place in Southwestern Ontario. The homes involved were of a smaller variety and were largely

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rural. It is assumed that the homes are representative of other similar homes outside of the greater Toronto, Ottawa, Hamilton, London and Windsor areas; however, based on the time limitations and the access to leaders, the scope was limited.

Second, the interviews were purposely addressed to LTC home leaders rather than front-line workers. The perspectives of front-line workers would be a tremendous opportunity for future research. Hence, future research may plan to replicate these questions with the recruitment of random front-line workers.

Third, given that this study is qualitative, a limitation is that the results were not compared to numerical outcomes such as hospitalizations, deaths, and infection rates. A mixed-methods study may provide additional instructive insight.

Fourth, the study took place from December 2024 to March 2025. Though this is a relatively short time period, the intensity of infection events within the targeted LTC homes varied within that time period. Given that some LTC homes were emerging from an outbreak status while others were not, the reflection of some participants would be retrospective in nature. For other participants, the stress of actively coping with an infection event may have had an impact on the depth and the quality of the responses. Multiple coders, at a single point in time, or coding taking place immediately after a LTC home emerges from an outbreak, may observe variation or enhancements in comparison to the aggregated findings.

A final limitation is that not all LTC homes in the region had planned to participate. Despite several emails, calls, and personal visits and my assurances of ethical integrity and anonymity, the LTC homes' leadership may have felt vulnerable with the observation and release

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of the results. In future, delving into the LTC homes' perceived vulnerabilities, then addressing them, may provide tremendous insights to help the sector in best practice achievement.

### **My Recommendations for Future Research**

I have seven major recommendations for future research. First, future research could be more comprehensive by interviewing front-line workers as to what critical factors drove their best practices achievement. This research could be generated with the same LTC home population, using similar qualitative questions, with a comparison of the thematic results of the front-line workers to the responses of the leadership participants.

Second, future research could also take a more quantitative approach by statistically observing which selected critical factors, as independent variables, provided the greatest impact on a limited set of outcomes, such as the number of yearly outbreaks, deaths, and unplanned hospital emergency department visits from targeted LTC homes. Evidence of the use of the critical factors, through qualitative survey instruments, with a comparison to objective data from third-party sources, linked to the LTC home, could provide a measure of the impact or strength of the critical factor.

Third, a recommendation for future research is to engage in a semi-structured interview while a LTC outbreak is occurring or immediately after a LTC home emerges from an outbreak. Through agreement with selected LTC homes prior to the outbreak season, a commitment to selected interviews would offer a more extensive set of observations of the mechanisms used to implement and maintain best practices.

Fourth, a case study research approach could be considered for a unique LTC home or a comparison of LTC homes through their infection prevention journey. A daily logbook or

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interview could be generated over an abbreviated timeline (e.g., two weeks) that would capture major initiatives, meetings, use of supportive tools, and the key decisions made. This log would help to generate a critical pathway or process for best practice implementation.

Fifth, a structured analysis could be created as a research approach whereby a prepopulated checklist of implementation mechanisms is provided to IPAC leaders that could be used and tracked daily to ascertain the frequency, fidelity, and effectiveness of the implementation mechanisms for a set time period. New implementation factors, or perhaps combinations of implementation factors, could emerge from this real-time analysis.

Sixth, a resident and family council could be brought together as a selection of focus groups to share their observations on implementation practices from their unique perspectives. A study that prospectively identifies practice intentions and asks residents and families to evaluate and comment on the implementation may provide unique insights from the customer perspective.

Finally, convalescence care units, rehabilitation units, hospice facilities, and group homes, as settings where congregate care takes place for high-risk residents, could also be of interest for future research. Through a research initiative similar to this study, the innovations and experiences of these care entities may reveal other innovative opportunities or critical factors for infection prevention implementation strategies.

### **Final Thoughts**

This study identified that the LTC sector has inherent best practices and successes that can advance frontline workers' practices. Research, such as this study, can benefit the total sector as ideas are circulated and adapted by leadership teams. Most importantly, the critical factors identified in this study help to create a holistic assessment for activities and mitigations

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required to establish the best practices and best possible outcomes for the resident population of LTC homes.

Ultimately, the people we care for, our parents, grandparents, friends and community members, deserve nothing less than our commitment to the most effective, evidence-informed care we can provide. The findings of this study offer a structured and practical blueprint or roadmap for achieving that standard through leadership, intentional implementation and sustained attention to the frontline reality of LTC homes.

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## References

Adu, P., 2016. Writing the methodology chapter of a qualitative study.  
<https://www.youtube.com/watch?v=KRHvxY3N708>

Adu, P., (2019). *A Step-by-Step Guide to Qualitative Data Coding*, Routledge

Adeoye-Olatunde, O. A., & Olenik, N. L. (2021). Research and scholarly methods: Semi-structured interviews. *Journal of the american college of clinical pharmacy*, 4(10), 1358-1367. <https://0-doi-org.aupac.lib.athabascau.ca/10.1002/jac5.1441>

Adeoye-Olatunde, O. A., & Olenik, N. L. (2021). Research and scholarly methods: Semi-structured interviews. *Journal of the american college of clinical pharmacy*, 4(10), 1358-1367.

Agency for Healthcare Research and Quality (2020) Section 4: Ways To Approach the Quality Improvement Process. <https://www.ahrq.gov/cahps/quality-improvement/improvement-guide/4-approach-qm-process/index.html>

Alase, A. (2017). The interpretative phenomenological analysis (IPA): A guide to a good qualitative research approach. *International journal of education and literacy studies*, 5(2), 9-19.

Ajzen, I. (2002). Residual effects of past on later behavior: Habituation and reasoned action perspectives. *Personality and social psychology review*, 6(2), 107-122.  
[https://doi.org/doi/pdf/10.1207/s15327957pspr0602\\_02](https://doi.org/doi/pdf/10.1207/s15327957pspr0602_02)

Alidina, S., Goldhaber-Fiebert, S. N., Hannenberg, A. A., Hepner, D. L., Singer, S. J., Neville, B. A., Sachetta, J. R., Lipsitz, S. R., & Berry, W. R. (2018). Factors associated with the use of cognitive aids in operating room crises: a cross-sectional study of US hospitals and ambulatory surgical centers. *Implementation science*, 13(1), 1-12. <https://0-doi-org.aupac.lib.athabascau.ca/10.1186/s13012-018-0739-4>

Angelini, E., Wolf, A., Wijk, H., Brisby, H., & Baranto, A. (2021). The impact of implementing a person-centred pain management intervention on resistance to change and organizational culture. *BMC Health Services Research*, 21(1), 1-11. <https://0-doi-org.aupac.lib.athabascau.ca/10.1186/s12913-021-06819-0>

Agarwal, P., & Farndale, E. (2017). High-performance work systems and creativity implementation: the role of psychological capital and psychological safety. *Human Resource Management Journal*, 27(3), 440-458. <https://0-doi-org.aupac.lib.athabascau.ca/10.1111/1748-8583.12148>

Au, J.K.L., Suen, L.K.P. & Lam, S.C. (2021). Observational study of compliance with infection control practices among healthcare workers in subsidized and private residential care

## EMBEDDING AIRBORNE INFECTION PREVENTION BEST PRACTICES IN LONG-TERM CARE HOMES: AN IMPLEMENTATION BLUEPRINT

homes. *BMC Infect Dis* 21, 75. <https://0-doi-org.aupac.lib.athabascau.ca/10.1186/s12879-021-05767-8>

Backman, A., Sjögren, K., Lindkvist, M., Lövheim, H., & Edvardsson, D. (2017). Characteristics of highly rated leadership in nursing homes using item response theory. *Journal of Advanced Nursing*, 73(12), 2903-2913. <https://doi.org/https://doi.org/10.1111/jan.13353>

Backman, A., Sjögren, K., Lövheim, H., Lindkvist, M., & Edvardsson, D. (2021). The influence of nursing home managers' leadership on person-centred care and stress of conscience: A cross-sectional study. *BMC nursing*, 20, 1-8. <https://0-doi-org.aupac.lib.athabascau.ca/10.1186/s12912-021-00718-9>

Baer, M., & Frese, M. (2003). Innovation is not enough: Climates for initiative and psychological safety, process innovations, and firm performance. *Journal of Organizational Behavior: The International Journal of Industrial, Occupational and Organizational Psychology and Behavior*, 24(1), 45-68. <https://0-doi-org.aupac.lib.athabascau.ca/10.1002/job.179>

Barker, A. K., Brown, K., Siraj, D., Ahsan, M., Sengupta, S., & Safdar, N. (2017). Barriers and facilitators to infection control at a hospital in northern India: a qualitative study. *Antimicrobial Resistance & Infection Control*, 6(1), 35. <https://doi.org/10.1186/s13756-017-0189-9>

Bauer, M. S., & Kirchner, J. (2020). Implementation science: What is it and why should I care? *Psychiatry Research*, 283, 112376. <https://doi.org/10.1016/j.psychres.2019.04.025>

Beck, A.M., Damkjær, K. & Tetens, I. (2009) Lack of compliance of staff in an intervention study with focus on nutrition, exercise and oral care among old (65+ yrs) Danish nursing home residents. *Aging Clin Exp Res* 21, 143–149. <https://0-doi-org.aupac.lib.athabascau.ca/10.1007/BF03325222>

Becker, M. C. (2004). Organizational routines: a review of the literature. *Industrial and corporate change*, 13(4), 643-678. <https://doi.org/https://0-doi-org.aupac.lib.athabascau.ca/10.1093/icc/dth026>

Berwick, D. (2008). The science of improvement. *Journal of the American Medical Association*, 299(10), 1182-1184. <https://doi:10.1001/jama.299.10.1182>

Betini, R., Milicic, S., & Lawand, C. (2021). The impact of the COVID-19 pandemic on long-term care in Canada. *Healthcare Quarterly (Toronto, Ont.)*, 24(3), 13-15. <https://doi.org/10.12927/hcq.2021.26625>

Bhattacharya, S. B., Jernigan, S., Hyatt, M., Sabata, D., Johnston, S., & Burkhardt, C. (2021). Preparing a healthcare workforce for geriatrics care: an Interprofessional team based learning program. *BMC Geriatrics*, 21(1). <https://doi.org/10.1186/s12877-021-02456-8>

## EMBEDDING AIRBORNE INFECTION PREVENTION BEST PRACTICES IN LONG-TERM CARE HOMES: AN IMPLEMENTATION BLUEPRINT

Boakye-Dankwa, E., Teeple, E., Gore, R., Punnett, L., & Team, P. R. (2017). Associations Among Health Care Workplace Safety, Resident Satisfaction, and Quality of Care in Long-Term Care Facilities. *Journal of Occupational and Environmental Medicine*, 59(11), 1127-1134. <https://doi.org/10.1097/jom.0000000000001163>

Bonawitz, K., Wetmore, M., Heisler, M., Dalton, V. K., Damschroder, L. J., Forman, J., Allan, K. R., & Moniz, M. H. (2020). Champions in context: which attributes matter for change efforts in healthcare? *Implementation science*, 15(1), 1-10. <https://doi.org/10.1186/s13012-020-01024-9>

Brandt, B.F. (2018), Rethinking Health Professions Education Through the Lens of Interprofessional Practice and Education. *New Directions for Adult and Continuing Education*, 2018: 65-76. <https://doi.org/10.1002/ace.20269>

Braun, V. & Clarke, V. (2006) Using thematic analysis in psychology, *Qualitative Research in Psychology*, 3:2, 77-101, ) <https://0-doi-org.aupac.lib.athabascau.ca/10.1186/s12912-021-00718-9>

Brewer, M. L., Flavell, H., Trede, F., & Smith, M. (2018). Creating change agents for interprofessional education and practice: a leadership programme for academic staff and health practitioners. *International Journal of Leadership in Education*, 21(5), 580-592. <https://0-doi-org.aupac.lib.athabascau.ca/10.1080/13603124.2017.1279349>

Bridges, W., & Bridges, S. (2016). *Managing Transitions: Making the Most of Change*. Da Capo Press.

Brydges, R., Nemoy, L., Ng, S., Khodadoust, N., Léger, C., Sampson, K., & Campbell, D. M. (2021). Getting everyone to the table: exploring everyday and everynight work to consider 'latent social threats' through interprofessional tabletop simulation. *Advances in Simulation*, 6(1), 1-8. <https://doi.org/10.1186/s41077-021-00191-z>

Bunniss, S., Gray, F., & Kelly, D. (2012). Collective learning, change and improvement in health care: trialling a facilitated learning initiative with general practice teams. *Journal of Evaluation in Clinical Practice*, 18(3), 630-636. <https://0-doi-org.aupac.lib.athabascau.ca/10.1111/j.1365-2753.2011.01641.x>

Brown KA, Jones A, Daneman N, et al. (2021). Association Between Nursing Home Crowding and COVID-19 Infection and Mortality in Ontario, Canada. *JAMA Intern Med.* 181(2),229–236. doi:10.1001/jamainternmed.2020.6466

Byrd, T. A., Lewis, B. R., & Turner, D. E. (2004). The Impact of IT Personnel Skills on IS Infrastructure and Competitive IS. *Information Resources Management Journal*, 17(2), 38-62. <https://doi.org/10.4018/irmj.2004040103>

## EMBEDDING AIRBORNE INFECTION PREVENTION BEST PRACTICES IN LONG-TERM CARE HOMES: AN IMPLEMENTATION BLUEPRINT

Campbell, K. A., Orr, E., Durepos, P., Nguyen, L., Li, L., Whitmore, C., ... & Jack, S. M. (2021). Reflexive thematic analysis for applied qualitative health research. *The Qualitative Report*, 26(6), 2011-2028. <https://doi.org/10.46743/2160-3715/2021.5010>

Castle, N., Wagner, L., Ferguson, J., & Handler, S. (2014). Hand hygiene deficiency citations in nursing homes. *Journal of Applied Gerontology*, 33(1), 24-50. <https://0-doi.org.aupac.lib.athabascau.ca/10.1177/0733464812449903>

City of London (2024). Position Description for Coordinator, Infection, Prevention and Control, Dearness Home. <https://na01.safelinks.protection.outlook.com/?url=https%3A%2F%2Fcareers.london.ca%2Fjob%2FLondon-Coordinator%252C-Infection%252C-Prevention-and-Control%252C-Dearness-Home-ON%2F577500117%2F&data=05%7C02%7C%7C779da688cdb648e3b92808dc40559230%7C84df9e7fe9f640afb435aaaaaaaaaa%7C1%7C0%7C638455983472901008%7CUnknown%7CTWFpbGZsb3d8eyJWljojMC4wLjAwMDAiLCJQIjoiV2luMzliiLCBTi6Ik1haWwiLCJXVCI6Mn0%3D%7C0%7C%7C%7C&sdata=7G%2F7wZQpFuz%2FoVJZVDYpRvib3N49v2IDPRKy4F%2B9Gw%3D&reserved=0>

Chadwick, A. (2012). A dignified approach to improving the patient experience: Promoting privacy, dignity and respect through collaborative training. *Nurse Education in Practice*, 12(4), 187-191. <https://0-doi.org.aupac.lib.athabascau.ca/10.1016/j.nep.2011.12.006>

Check, D. K., Zullig, L. L., Davis, M. M., Davies, L., Chambers, D., Fleisher, L., ... & Koczwara, B. (2021). Improvement science and implementation science in cancer care: identifying areas of synergy and opportunities for further integration. *Journal of general internal medicine*, 36, 186-195. <https://doi.org/10.1007/s11606-020-06138-w>

Chen, E., Neta, G., & Roberts, M. (2021) Complementary approaches to problem solving in healthcare and public health: implementation science and human-centered design, *Translational Behavioral Medicine*, 11(5), 1115-1121. <https://doi.org/10.1093/tbm/iba079>

Chipfuwa, T., Manwere, A., & Petronella, S. (1940). Barriers to infection prevention and control (IPC) practice among nurses at Bindura Provincial Hospital, Zimbabwe. *IOSR Journal of Nursing and Health Science*, 3, 69-73. <https://doi.org/10.9790/1959-03146973>

Chopra, V., & Shojania, K. G. (2013). Recipes for checklists and bundles: one part active ingredient, two parts measurement. *BMJ quality & safety*, 22(2), 93-96. <https://doi.org/10.1136/bmjqqs-2012-001480>

Chu, K., & Weiser, T. 2021. Real world implementation challenges in low-resource settings. *The lancet* 9(10), E1341-E1342. DOI:[https://doi.org/10.1016/S2214-109X\(21\)00310-7](https://doi.org/10.1016/S2214-109X(21)00310-7)

Chreim, S., Langley, A., Comeau-Vallée, M., Huq, J.-L., & Reay, T. (2013). Leadership as boundary work in healthcare teams. *Leadership*, 9(2), 201-228. <https://doi.org/10.1177/1742715012468781>

## EMBEDDING AIRBORNE INFECTION PREVENTION BEST PRACTICES IN LONG-TERM CARE HOMES: AN IMPLEMENTATION BLUEPRINT

Clack, L., Zingg, W., Saint, S., Casillas, A., Touveneau, S., da Liberdade Jantarada, F., ... & Sax, H. (2018). Implementing infection prevention practices across European hospitals: an in-depth qualitative assessment. *BMJ quality & safety*, 27(10), 771-780. <https://doi.org/10.1136/bmjqqs-2017-007675>

Clay-Williams, R., & Colligan, L. (2015). Back to basics: checklists in aviation and healthcare. *BMJ quality & safety*, 24(7), 428-431. <https://doi.org/10.1136/bmjqqs-2015-003957>

Cohen, M. D. (1991). Individual learning and organizational routine: Emerging connections. *Organization science*, 2(1), 135-139. <https://doi.org/10.1287/orsc.2.1.135>

Contu, A., & Willmott, H. (2003). Re-embedding situatedness: The importance of power relations in learning theory. *Organization Science*, 14(3), 283-296. <https://doi.org/doi/abs/10.1287/orsc.14.3.283.15167>

Cooper, T. (2004). Delivering an infection control link nurse programme: improving practice. *British Journal of Infection Control*, 5(6), 24-27. <https://0-doi-org.aupac.lib.athabascau.ca/10.1177/14690446040050060501>

Cottrell, S. (2014). *Dissertations and project reports: A step by step guide*. Bloomsbury Publishing.

Cox, M., & Sandberg, K. (2018). Modeling causal relationships in quality improvement. *Current problems in pediatric and adolescent health care*, 48(7), 182-185. <https://0-doi-org.aupac.lib.athabascau.ca/10.1016/j.cppeds.2018.08.011>

Creswell, J. W. (2021). *A concise introduction to mixed methods research*. SAGE publications.

Cummings, G. G., Hewko, S. J., Wang, M., Wong, C. A., Laschinger, H. K. S., & Estabrooks, C. A. (2018). Impact of Managers' Coaching Conversations on Staff Knowledge Use and Performance in Long-Term Care Settings. *Worldviews on Evidence-Based Nursing*, 15(1), 62-71. <https://doi.org/https://doi.org/10.1111/wvn.12233>

Damschroder, L. J., Aron, D. C., Keith, R. E., Kirsh, S. R., Alexander, J. A., & Lowery, J. C. (2009). Fostering implementation of health services research findings into practice: a consolidated framework for advancing implementation science. *Implementation science*, 4(1), 1-15. <https://doi:10.1186/1748-5908-4-50>

Data.Ontario.ca (2023) <https://data.ontario.ca/dataset/42df36df-04a0-43a9-8ad4-fac5e0e22244/resource/4b64488a-0523-4ebb-811a-fac2f07e6d59/download/activeltcoutbreak.csv>

## EMBEDDING AIRBORNE INFECTION PREVENTION BEST PRACTICES IN LONG-TERM CARE HOMES: AN IMPLEMENTATION BLUEPRINT

Dekker, M., Van Mansfeld, R., Vandenbroucke-Grauls, C., De Bruijne, M., & Jongerden, I. (2020). Infection control link nurse programs in Dutch acute care hospitals; a mixed-methods study. *Antimicrobial Resistance and Infection Control*, 9(1), 1-10. <https://doi.org/10.1186/s13756-020-0704-2>

Dixon-Woods, M., Bosk, C. L., Aveling, E. L., Goeschel, C. A., & Pronovost, P. J. (2011). Explaining Michigan: Developing an Ex Post Theory of a Quality Improvement Program. *Milbank Quarterly*, 89(2), 167-205. <https://doi.org/10.1111/j.1468-0009.2011.00625.x>

Drucker, P. F. (2004). What makes an effective executive. *Harvard business review*, 82(6).

Duan, Y., Wang, J., Lanham, H.J. *et al.* How context links to best practice use in long-term care homes: a mixed methods study. *Implement Sci Commun* 5, 63 (2024). <https://doi.org/10.1186/s43058-024-00600-0>

Dunwoodie, K., Macaulay, L., & Newman, A. (2023). Qualitative interviewing in the field of work and organisational psychology: Benefits, challenges and guidelines for researchers and reviewers. *Applied Psychology*, 72(2), 863-889. <https://doi.org/10.1111/apps.12414>

Dwyer, D. (2011). Experiences of registered nurses as managers and leaders in residential aged care facilities: a systematic review. *JBI Evidence Implementation*, 9(4), 388-402. <https://doi.org/10.1111/j.1744-1609.2011.00239.x>

Eaton-Williams, P., & Williams, J. (2024). 'Family members screaming for help makes it very difficult to don PPE'. A qualitative study on UK ambulance staff experiences of infection prevention and control practices during the COVID-19 pandemic. *Journal of Infection Prevention*, 25(1-2), 17-23. <https://doi.org/10.1177/17571774231209494>

Estabrooks, C. A., Straus, S., Flood, C., Keefe, J., Armstrong, P., Donner, G., Boscart, V., Ducharme, F., Silvius, J., & Wolfson, M. (2020). Restoring trust: COVID-19 and the future of long-term care in Canada. *FACETS*. 5(1): 651-691. <https://doi.org/10.1139/facets-2020-0056>

Edmondson, A. C., Higgins, M., Singer, S., & Weiner, J. (2016). Understanding psychological safety in health care and education organizations: a comparative perspective. *Research in Human Development*, 13(1), 65-83. <https://doi.org/10.1080/15427609.2016.1141280>

## EMBEDDING AIRBORNE INFECTION PREVENTION BEST PRACTICES IN LONG-TERM CARE HOMES: AN IMPLEMENTATION BLUEPRINT

Edmondson, A., & Moineon, B. (1998). From organizational learning to the learning organization. *Management learning*, 29(1), 5-20. <https://0-doi-org.aupac.lib.athabascau.ca/10.1177/1350507698291001>

Eventide Home (2024). Infection Prevention and Control (IPAC) Manager Position Description. <https://na01.safelinks.protection.outlook.com/?url=https%3A%2F%2Fca.indeed.com%2Fviewjob%3Fjk%3D0d21b3b08d66e049&data=05%7C02%7C%7Ce1eddf2f3ee2407b269808dc4055e7b5%7C84df9e7fe9f640afb435aaaaaaaaaa%7C1%7C0%7C638455984903189070%7CUnknown%7CTWFpbGZsb3d8eyJWljojMC4wLjAwMDAiLCJQIjoiV2luMzIiLCJBtil6Ik1haWwiLCJXVCI6Mn0%3D%7C0%7C%7C&sdata=IqCegzhaKWYRZTX1wPXKo%2FFnBIUa%2BRaXvks9alx1ZGQ%3D&reserved=0>

Fallon, A., Dukelow, T., Kennelly, S. P., & O'Neill, D. (2020). COVID-19 in nursing homes. *QJM: An International Journal of Medicine*, 113(6), 391-392. <https://doi.org/10.1093/qjmed/hcaa136>

Farlex Partner Medical Dictionary. (2012). <https://medicaldictionary.thefreedictionary.com/social+adaptation>

Feldman, M. S., & Pentland, B. T. (2003). Reconceptualizing Organizational Routines as a Source of Flexibility and Change. *Administrative Science Quarterly*, 48(1), 94-118. <https://doi.org/10.2307/3556620>

Fell, G. (2008). Preparedness of Residential and Nursing Homes for Pandemic Flu. *Journal of Public Health*, 30(1), 99-102. <https://doi.org/10.1093/pubmed/fdm086>

Fifolt, M., White, M. L., & McCormick, L. C. (2019). Using Simulation to Teach Biosafety and Interprofessional Principles to Students Underrepresented in the Healthcare Professions. *Journal of Best Practices in Health Professions Diversity*, 12(1), 46-57. <https://www.jstor.org/stable/26894226>

Fletcher, K. A., & Bedwell, W. L. (2014). Cognitive aids: design suggestions for the medical field. In *Proceedings of the International Symposium on Human Factors and Ergonomics in Health Care* (Vol. 3, No. 1, pp. 148-152). Sage CA: Los Angeles, CA: SAGE Publications. <https://0-doi-org.aupac.lib.athabascau.ca/10.1177/2327857914031024>

Flynn, R., Brooks, S.P., Thomson, D., Zimmermann, G.L., Johnson, D., & Wasylak, T. (2021) An Implementation Science Laboratory as One Approach to Whole System Improvement: A Canadian Healthcare Perspective. *International Journal of Environmental Research and Public Health*. 18(23):12681. <https://doi.org/10.3390/ijerph182312681>

Flynn, R., Mrklas, K., Campbell, A., Wasylak, T., & Scott, S. D. (2021). Contextual factors and mechanisms that influence sustainability: a realist evaluation of two scaled, multi-

## EMBEDDING AIRBORNE INFECTION PREVENTION BEST PRACTICES IN LONG-TERM CARE HOMES: AN IMPLEMENTATION BLUEPRINT

component interventions. *BMC Health Services Research*, 21(1), 1-17.  
<https://doi.org/https://doi.org/10.1186/s12913-021-07214-5>

Frankel, A., Haraden, C., Federico, F., & Lenoci-Edwards, J. (2017). A framework for safe, reliable, and effective care. *White paper. Cambridge, MA: Institute for Healthcare Improvement and Safe & Reliable Healthcare*. 1-31.  
<http://www.ihi.org/resources/Pages/IHIWhitePapers/Framework-Safe-Reliable-Effective-Care>

Gaba, D. M. (2013). Perioperative Cognitive Aids in Anesthesia: What, Who, How, and Why Bother? *Anesthesia & Analgesia*, 117(5), 1033-1036.  
<https://doi.org/10.1213/ANE.0b013e3182a571e3>

Galaviz, K., Breland, J., Sanders, M., Breathett, K., Cerezo, A., Gil, O., Hollier, J., Marshall, C., Wilson, J., & Essien, U. (2020) Implementation science to address health disparities during the coronavirus pandemic, *Health Equity* 4 (1), 463–467.  
<https://doi.org/10.1089/heq.2020.0044>

Golafshani, N. (2003). Understanding reliability and validity in qualitative research. *The qualitative report*, 8(4), 597-607. <http://www.nova.edu/ssss/QR/QR8-4/golafshani.pdf>

Garber, E., Desai, M., Zhou, J., Alba, L., Angst, D., Cabana, M., & Saiman, L. (2008). Barriers to adherence to cystic fibrosis infection control guidelines. *Pediatric Pulmonology*, 43(9), 900-907. <https://doi.org/https://doi.org/10.1002/ppul.20876>

Gaughan, A., Walker, D., & McAlearney, A. (2020). Identifying Leadership Practices for Success in Healthcare-Associated Infection Prevention. *Health Services Research*, 55, 116-117. <https://doi.org/https://0-doi-org.aupac.lib.athabascau.ca/10.1111/1475-6773.13497>

Gifford WA, Davies BL, Ploeg J, Eldred S, & Bajnok I. (2013).Moving knowledge to action: a qualitative study of the Registered Nurses' Association of Ontario Advanced Clinical Practice Fellowship program. *Nursing Leadership*, 26(1):32-57. DOI: 10.12927/cjnl.2013.23302. PMID: 24863580.

Gillese E (2020) <https://files.ontario.ca/mltc-long-term-care-staffing-study-en-2020-07-31.pdf>

Giri, S., Chenn, L. M., & Romero-Ortuno, R. (2021). Nursing homes during the COVID-19 pandemic: a scoping review of challenges and responses. *European Geriatric Medicine*, 12(6), 1127-1136. <https://doi.org/10.1007/s41999-021-00531-2>

Goldhaber-Fiebert, S. N., & Howard, S. K. (2013). Implementing emergency manuals: can cognitive aids help translate best practices for patient care during acute events? *Anesthesia & Analgesia*, 117(5), 1149-1161. DOI: 10.1213/ANE.0b013e318298867a

## EMBEDDING AIRBORNE INFECTION PREVENTION BEST PRACTICES IN LONG-TERM CARE HOMES: AN IMPLEMENTATION BLUEPRINT

Goolsarran, N., Hamo, C. E., Lane, S., Frawley, S., & Lu, W. H. (2018). Effectiveness of an interprofessional patient safety team-based learning simulation experience on healthcare professional trainees. *BMC medical education*, 18, 1-8. <https://0-doi-org.aupac.lib.athabascau.ca/10.1186/s12909-018-1301-4>

Gopal Rao, G., Jeanes, A., Russell, H., Wilson, D., Atere-Roberts, E., O'Sullivan, D., & Donaldson, N. (2009). Effectiveness of short-term, enhanced, infection control support in improving compliance with infection control guidelines and practice in nursing homes: a cluster randomized trial. *Epidemiology and Infection*, 137(10), 1465–1471. doi:10.1017/S0950268809002210

Goreshnik, A., Corey, M. T., Rhodes Kropf, J., & Schwartz, A. W. (2022). Learning about sites of care for older adults: a jigsaw educational session for medical students. *Age and Ageing*, 51(3). <https://doi.org/10.1093/ageing/afac032>

Gorsuch, C. P. F., Gallagher Ford, L., Koshy Thomas, B., Melnyk, B. M., & Connor, L. (2020). Impact of a formal educational skill-building program based on the ARCC Model to enhance evidence-based practice competency in nurse teams. *Worldviews on Evidence-Based Nursing*, 17(4), 258-268. <https://0-doi-org.aupac.lib.athabascau.ca/10.1111/wvn.12463>

Graen, G., Canedo, J. C., & Grace, M. (2020). Team coaching can enhance psychological safety and drive organizational effectiveness. *Organizational Dynamics*, 49(2), 100697. <https://0-doi-org.aupac.lib.athabascau.ca/10.1016/j.orgdyn.2019.01.003>

Graham, I.D., Logan, J., Harrison, M.B., Straus, S.E., Tetroe, J., Caswell, W. and Robinson, N. (2006), Lost in knowledge translation: Time for a map?. *J. Contin. Educ. Health Prof.*, 26: 13-24. <https://doi.org/10.1002/chp.47>

Grove, A., Clarke, A., Currie, G., Metcalfe, A., Pope, C., & Seers, K. (2020). Advancing clinical leadership to improve the implementation of evidence-based practice in surgery: a longitudinal mixed-method study protocol. *Implementation science*, 15(1), 1-10. <https://doi.org/10.1186/s13012-020-01063-2>

Haber, S. L., & Boomershine, V. (2015). An elective course in evidence-based health care using team-based learning. *Currents in Pharmacy Teaching and Learning*, 7(2), 259-264. <https://doi.org/https://doi.org/10.1016/j.cptl.2014.11.004>

Hammerschmidt, J., & Manser, T. (2019). Nurses' knowledge, behaviour and compliance concerning hand hygiene in nursing homes: a cross-sectional mixed-methods study. *BMC health services research*, 19, 1-13. <https://0-doi-org.aupac.lib.athabascau.ca/10.1186/s12913-019-4347-z>

## EMBEDDING AIRBORNE INFECTION PREVENTION BEST PRACTICES IN LONG-TERM CARE HOMES: AN IMPLEMENTATION BLUEPRINT

Handley, M. A., Gorukanti, A., & Cattamanchi, A. (2016). Strategies for implementing implementation science: a methodological overview. *Emergency Medicine Journal*, 33(9), 660-664. <https://doi.org/10.1136/emermed-2015-205461>

Handor, R., Persoon, A., van Lieshout, F., Lovink, M., & Vermeulen, H. (2022). The Required Competencies of Bachelor- and Master-Educated Nurses in Facilitating the Development of an Effective Workplace Culture in Nursing Homes: An Integrative Review. *International Journal of Environmental Research and Public Health*, 19(19), 12324. <https://doi.org/10.3390/ijerph191912324>

Hattula J. & Stevens P. (1997). A Descriptive Study of the Handwashing Environment in a Long-Term Care Facility. *Clinical Nursing Research*, 6(4):363-374. doi:10.1177/105477389700600406

Havig, A. K., Skogstad, A., Veenstra, M., & Romøren, T. I. (2011). The effects of leadership and ward factors on job satisfaction in nursing homes: a multilevel approach. *Journal of Clinical Nursing*, 20(23-24), 3532-3542. <https://doi.org/https://doi.org/10.1111/j.1365-2702.2011.03697.x>

Herbeć, A., Chimhini, G., Rosenberg-Pacareu, J., Sithole, K., Rickli, F., Chimhuya, S., Manyau, S., Walker, A. S., Klein, N., Lorencatto, F., & Fitzgerald, F. C. (2020). Barriers and facilitators to infection prevention and control in a neonatal unit in Zimbabwe – a theory-driven qualitative study to inform design of a behaviour change intervention. *Journal of Hospital Infection*, 106(4), 804-811. <https://doi.org/https://doi.org/10.1016/j.jhin.2020.09.020>

Huang, C. Y., & Liu, Y. C. (2022). Influence of need for cognition and psychological safety climate on information elaboration and team creativity. *European Journal of Work and Organizational Psychology*, 31(1), 102-116. DOI: [10.1080/1359432X.2021.1932815](https://doi.org/10.1080/1359432X.2021.1932815)

Huang, T. T., & Wu, S. C. (2008). Evaluation of a training programme on knowledge and compliance of nurse assistants' hand hygiene in nursing homes. *Journal of Hospital Infection*, 68(2), 164-170. <https://doi.org/https://doi.org/10.1016/j.jhin.2007.11.020>

Huber, G. P. (1991). Organizational learning: The contributing processes and the literatures. *Organization science*, 2(1), 88-115. <https://doi.org/https://doi.org/10.1287/orsc.2.1.88>

Huis, A., Holleman, G., van Achterberg, T., Grol, R., Schoonhoven, L., & Hulscher, M. (2013). Explaining the effects of two different strategies for promoting hand hygiene in hospital nurses: a process evaluation alongside a cluster randomised controlled trial. *Implementation Science*, 8, 1-13. <https://doi.org/https://doi.org/10.1186/1748-5908-8-41>

## EMBEDDING AIRBORNE INFECTION PREVENTION BEST PRACTICES IN LONG-TERM CARE HOMES: AN IMPLEMENTATION BLUEPRINT

Institute for Healthcare Improvement; The Breakthrough Series: IHI's Collaborative Model for Achieving Breakthrough Improvement. *Diabetes Spectr* 1 April 2004; 17 (2): 97–101. <https://doi.org/10.2337/diaspect.17.2.97>

Iida, K., Ryan, A., Hasson, F., Payne, S., & McIlpatrick, S. (2021). Palliative and end-of-life educational interventions for staff working in long-term care facilities: An integrative review of the literature. *International Journal of Older People Nursing*, 16(1), e12347. <https://doi.org/https://doi.org/10.1111/opn.12347>

Issen, L., Woodcock, T., McNicholas, C., Lennox, L., & Reed, J. E. (2018). Criteria for evaluating programme theory diagrams in quality improvement initiatives: a structured method for appraisal. *International Journal for Quality in Health Care*, 30(7), 508-513. <https://doi.org/10.1093/intqhc/mzy063>

Ito, A., Sato, K., Yumoto, Y., Sasaki, M., & Ogata, Y. (2022). A concept analysis of psychological safety: Further understanding for application to health care. *Nurs Open*, 9(1), 467-489. <https://doi.org/10.1002/nop2.1086>

Itri, J. N., Bakow, E., Probyn, L., Kadom, N., Duong, P.-A. T., Gettle, L. M., Mendiratta-Lala, M., Scali, E. P., Winokur, R. S., & Zygmont, M. E. (2017). The science of quality improvement. *Academic Radiology*, 24(3), 253-262. <http://dx.doi.org/10.1016/j.acra.2016.05.010>

Jääski, T., Talvio, H., Kuha, S., & Kanste, O. (2024). Crisis management competencies needed in a hospital setting during the COVID-19 pandemic: A qualitative study of nurse leaders. *Nursing Open*, 11(3), e2138. <https://doi.org/10.1002/nop2.2138>

Jacobs, L. G., & Garrett, R. C. (2020). Hospital Care for COVID-19: What Have We Learned? *Journal of the American Geriatrics Society*, 68(11), 2428-2430. <https://doi.org/10.1111/jgs.16896>

Jamshed, S. (2014). Qualitative research method-interviewing and observation. *Journal of basic and clinical pharmacy*, 5(4), 87. <https://doi.org/10.4103%2F0976-0105.141942>

Javed, B., Jalees, T., Herani, G. M., & Rolle, J. A. (2020). Error Management Culture and its impact on organizational performance: A moderated mediation model. *Journal of Business and Retail Management Research*, 15(1). [https://jbrmr.com/cdn/article\\_file/2020-10-27-12-52-47-PM.pdf](https://jbrmr.com/cdn/article_file/2020-10-27-12-52-47-PM.pdf)

Johnston, B., Papadopoulou, C., Östlund, U., Hunter, K., Andrew, J., & Buchanan, D. (2017). What's dignity got to do with it? Patient experience of the dignity care intervention: A qualitative evaluation study. *SAGE Open Nursing*, 3, 2377960817699839. <https://doi.org/10.1177/2377960817699839>

## EMBEDDING AIRBORNE INFECTION PREVENTION BEST PRACTICES IN LONG-TERM CARE HOMES: AN IMPLEMENTATION BLUEPRINT

Jones-Schenk, J., & Bleich, M. R. (2019). Implementation science as a leadership and doctor of nursing practice competency. *The Journal of Continuing Education in Nursing*, 50(11), 491-492. <https://doi.org/10.3928/00220124-20191015-03>

Jongen, C., McCalman, J., & Bainbridge, R. (2018). Health workforce cultural competency interventions: a systematic scoping review. *BMC Health Services Research*, 18(1). <https://doi.org/10.1186/s12913-018-3001-5>

Jordan, M. E., Lanham, H. J., Crabtree, B. F., Nutting, P. A., Miller, W. L., Stange, K. C., & McDaniel, R. R. (2009). The role of conversation in health care interventions: enabling sensemaking and learning. *Implementation science*, 4(1), 15. <https://doi.org/10.1186/1748-5908-4-15>

Joshi, T., Budhathoki, P., Adhikari, A., Poudel, A., Raut, S., & Shrestha, D. B. (2022). Team-Based Learning Among Health Care Professionals: A Systematic Review. *Cureus*, 14(1), e21252. <https://doi.org/10.7759/cureus.21252>

Kang, H. Y., & Kim, H. R. (2021). Impact of blended learning on learning outcomes in the public healthcare education course: a review of flipped classroom with team-based learning. *BMC Medical Education*, 21(1), 78. <https://doi.org/10.1186/s12909-021-02508-y>

Karnøe, P. (1995). COMPETENCE AS PROCESS AND THE SOCIAL EMBEDDEDNESS OF COMPETENCE BUILDING. In *Academy of Management Proceedings*, 1995 (1), 427-431. <https://doi.org/10.5465/ambpp.1995.17536704>

Kauffeld, S. (2006). Self-directed work groups and team competence. *Journal of Occupational and Organizational Psychology*, 79(1), 1-21. <https://doi.org/10.1348/096317905x53237>

Kaur, M., Bragazzi, N. L., Heffernan, J., Tsasis, P., Wu, J., & Kong, J. D. (2023). COVID-19 in Ontario Long-term Care Facilities Project, a manually curated and validated database. *Frontiers in Public Health*, 11, 1133419. <https://doi.org/10.3389/fpubh.2023.1133419>

Kay, S., Unroe, K. T., Lieb, K. M., Kaehr, E. W., Blackburn, J., Stump, T. E., Evans, R., Klepfer, S., & Carnahan, J. L. (2023). Improving Communication in Nursing Homes Using Plan-Do-Study-Act Cycles of an SBAR Training Program. *Journal of Applied Gerontology*, 42(2), 194-204. <https://doi.org/10.1177/07334648221131469>

Koopmann, J., Lanaj, K., Wang, M., Zhou, L., & Shi, J. (2016). Nonlinear effects of team tenure on team psychological safety climate and climate strength: Implications for average team member performance. *Journal of Applied Psychology*, 101(7), 940 – 957. <https://psycnet.apa.org/doi/10.1037/apl0000097>

## EMBEDDING AIRBORNE INFECTION PREVENTION BEST PRACTICES IN LONG-TERM CARE HOMES: AN IMPLEMENTATION BLUEPRINT

Kruse, K. (2013). What is leadership. *Forbes magazine*, 3.

Langley, G. J., Moen, R. D., Nolan, K. M., Nolan, T. W., Norman, C. L., & Provost, L. P. (2009). *The improvement guide: a practical approach to enhancing organizational performance*. John Wiley & Sons.

Lee, C.-Y., Lee, M.-H., Lee, S.-H., & Park, Y.-H. (2018). Nurses' Views on Infection Control in Long-Term Care Facilities in South Korea: A Focus Group Study. *kjan*, 30(6), 634-642. <https://doi.org/10.7475/kjan.2018.30.6.634>

Leggat, S. G. (2007). Effective healthcare teams require effective team members: defining teamwork competencies. *BMC Health Services Research*, 7(1), 1-10. doi:10.1186/1472-6963-7-17

Levitt, B., & March, J. G. (1988). Organizational Learning. *Annual Review of Sociology*, 14(1), 319-338. <https://doi.org/10.1146/annurev.so.14.080188.001535>

Levy, C., Zimmerman, C., Mor, S., Gifford, V., Greenberg, D., Klinger, S., J.H. et al. (2022). Pragmatic Trials in Long-Term Care: Implementation and Dissemination Challenges and Opportunities. *Journal of the American Medical Directors Association*, 23 (3) Pages 339-344 DOI: <https://doi.org/10.1016/j.jamda.2021.11.024>

Lewis, S. (2015). Qualitative inquiry and research design: Choosing among five approaches. *Health promotion practice*, 16(4), 473-475. <https://doi.org/10.1177/1524839915580941>

Lincoln, Y. S., & Guba, E. G. (1985). *Naturalistic inquiry*. Sage Publications

Lincoln, Y., Lynham, S., & Guba, E (2011) Paradigmatic controversies, contradictions, and emerging confluences, revisited. *The Sage handbook of qualitative research*.

Liu, J., Ponzer, S., Farrokhnia, N., & Masiello, I. (2021). Evaluation of interprofessional teamwork modules implementation in an emergency department—A mixed-methods case study of implementation fidelity. *BMC Health Services Research*, 21(1), 1-12. <https://doi.org/10.1186/s12913-021-06822-5>

Lourida, I., Abbott, R.A., Rogers, M. et al. Dissemination and implementation research in dementia care: a systematic scoping review and evidence map. *BMC Geriatr* 17, 147 (2017). <https://doi.org/10.1186/s12877-017-0528-y>

## EMBEDDING AIRBORNE INFECTION PREVENTION BEST PRACTICES IN LONG-TERM CARE HOMES: AN IMPLEMENTATION BLUEPRINT

Manalili, K., & Santana, M. J. (2021). Using implementation science to inform the integration of electronic patient-reported experience measures (ePREMs) into healthcare quality improvement: description of a theory-based application in primary care. *Quality of Life Research*, 30(11), 3073-3084. <https://0-doi-org.aupac.lib.athabascau.ca/10.1007/s11136-020-02588-1>

Mariani, E., Chattat, R., Vernooij-Dassen, M., Koopmans, R., Engels, Y., & Mecocci, P. (2017). Care Plan Improvement in Nursing Homes: An Integrative Review. *Journal of Alzheimer's Disease*, 55(4), 1621-1638. <https://doi.org/10.3233/jad-160559>

Marshall, C., G. Rossman and Blanco, G. (2022). Designing qualitative research, Seventh Edition, Sage publications.

Marshall, S. (2013). The Use of Cognitive Aids During Emergencies in Anesthesia: A Review of the Literature. *Anesthesia & Analgesia*, 117(5), 1162-1171. <https://doi.org/10.1213/ANE.0b013e31829c397b>

Masso, M., & Thompson, C. (2017). Australian research investigating the role of nurse practitioners: A view from implementation science. *Collegian*, 24(3), 281-291. <https://0-doi-org.aupac.lib.athabascau.ca/10.1016/j.colegn.2016.04.003>

Martínez-Payá, M., Carrillo, I., & Guilabert, M. (2022). Lessons Learned from the COVID-19 Pandemic in Nursing Homes: A Systematic Review. *International Journal of Environmental Research and Public Health*, 19(24), 16919. <https://doi.org/10.3390/ijerph192416919>

May, C. R., Mair, F., Finch, T., MacFarlane, A., Dowrick, C., Treweek, S., ... & Montori, V. M. (2009). Development of a theory of implementation and integration: Normalization Process Theory. *Implementation Science*, 4, 1-9. <https://0-doi-org.aupac.lib.athabascau.ca/10.1186/1748-5908-4-29>

Mazon, C., Fage, C., Conseil, C., Amestoy, A., Hesling, I., Bouvard, M., ... & Sauzéon, H. (2019). Cognitive mediators of school-related socio-adaptive behaviors in ASD and intellectual disability pre-and adolescents: A pilot-study in french special education classrooms. *Brain sciences*, 9(12), 334. <https://doi.org/10.3390/brainsci9120334>

McCauley, L., Kirwan, M., & Matthews, A. (2021). The factors contributing to missed care and non-compliance in infection prevention and control practices of nurses: A scoping review. *International Journal of Nursing Studies Advances*, 3, 100039. <https://doi.org/https://doi.org/10.1016/j.ijnsa.2021.100039>

## EMBEDDING AIRBORNE INFECTION PREVENTION BEST PRACTICES IN LONG-TERM CARE HOMES: AN IMPLEMENTATION BLUEPRINT

McDermott, D., McEwing, E., Lopez, J., Osso, M., & Trujillo, G. (2021). Pandemic Crisis: Simulation Contingency Plans. *Teaching and Learning in Nursing*, 16(4), 393-395. <https://doi.org/https://doi.org/10.1016/j.teln.2021.04.007>

McGilton, K. S., Backman, A., Boscart, V., Chu, C., Gea Sánchez, M., Irwin, C., Meyer, J., Spilsbury, K., Zheng, N., & Zúñiga, F. (2020). Exploring a common data element for international research in long-term care homes: A measure for evaluating nursing supervisor effectiveness. *Gerontology and Geriatric Medicine*, 6, 2333721420979812. <https://doi.org/10.1177/2333721420979812>

Mody, L., & Cinti, S. (2007). Pandemic Influenza Planning in Nursing Homes: Are We Prepared? *Journal of the American Geriatrics Society*, 55(9), 1431-1437. <https://doi.org/https://doi.org/10.1111/j.1532-5415.2007.01299.x>

Mody, L., Langa, K. M., Saint, S., & Bradley, S. F. (2005). Preventing infections in nursing homes: A survey of infection control practices in southeast Michigan. *American journal of infection control*, 33(8), 489-492. <https://doi.org/https://doi.org/10.1016/j.ajic.2005.01.011>

Murphy, D. M., Hanchett, M., Olmsted, R. N., Farber, M. R., Lee, T. B., Haas, J. P., & Streed, S. A. (2012). Competency in infection prevention: a conceptual approach to guide current and future practice. *American journal of infection control*, 40(4), 296-303. <https://doi.org/https://0-doi-org.aupac.lib.athabascau.ca/10.1016/j.ajic.2012.03.002>

Naeem, M., Ozuem, W., Howell, K., & Ranfagni, S. (2023). A step-by-step process of thematic analysis to develop a conceptual model in qualitative research. *International Journal of Qualitative Methods*, 22, 16094069231205789. <https://0-doi-org.aupac.lib.athabascau.ca/10.1177/16094069231205789>

Nakamura, S., Itoh, M., Miki, Y., Kido, T., Kamei, H., Suzuki, S., & Ohtsuki, M. (2020). Relationship between peer evaluation and interprofessional self-evaluation in a joint healthcare team-based learning class involving three universities. *Fujita Medical Journal*, 6(4), 102-109. <https://doi.org/10.20407/fmj.2019-017>

Neta, G., Brownson, R. C., & Chambers, D. A. (2017). Opportunities for Epidemiologists in Implementation Science: A Primer. *American Journal of Epidemiology*, 187(5), 899-910. <https://doi.org/10.1093/aje/kwx323>

Nojavan, M., Salehi, E., & Omidvar, B. (2018). Conceptual change of disaster management models: A thematic analysis. *Jàmbá: Journal of Disaster Risk Studies*, 10(1), 1-11. <https://hdl.handle.net/10520/EJC-ecbbe2634>. <https://doi.org/10.4102/jamba.v10i1.451>

Northey, M., Tepperman, L., & Albanese, P. (2012). *Making Sense*. Oxford University Press.

## EMBEDDING AIRBORNE INFECTION PREVENTION BEST PRACTICES IN LONG-TERM CARE HOMES: AN IMPLEMENTATION BLUEPRINT

Occupational Safety Group (2023) *Joint Health and Safety Committee (JHSC) Certification Part 2. Participant Manual*. Published in London Ontario 330 Dingman Drive N6E 3W8

Ortega, A., Van den Bossche, P., Sánchez-Manzanares, M., Rico, R., & Gil, F. (2014). The influence of change-oriented leadership and psychological safety on team learning in healthcare teams. *Journal of Business and Psychology*, 29(2), 311-321. <https://DOI 10.1007/s10869-013-9315-8>

Øvretveit, J. (2009). Understanding and improving patient safety: the psychological, social and cultural dimensions. *Journal of Health Organization and Management*, 23(6), 581-596. <https://doi.org/10.1108/14777260911001617>

Palmer, J. A., Parker, V. A., Barre, L. R., Mor, V., Volandes, A. E., Belanger, E., Loomer, L., McCreedy, E., & Mitchell, S. L. (2019). Understanding implementation fidelity in a pragmatic randomized clinical trial in the nursing home setting: a mixed-methods examination. *Trials*, 20(1), 656. <https://doi.org/10.1186/s13063-019-3725-5>

Pan, J. L., Chochinov, H., Thompson, G., & McClement, S. (2016). The TIME Questionnaire: A tool for eliciting personhood and enhancing dignity in nursing homes. *Geriatric Nursing*, 37(4), 273-277. <https://0-doi-org.aupac.lib.athabascau.ca/10.1016/j.gerinurse.2016.03.001>

Pentland, B. T., & Rueter, H. H. (1994). Organizational Routines as Grammars of Action [Article]. *Administrative Science Quarterly*, 39(3), 484-510. <https://doi.org/10.2307/2393300>

Peak, J. (2021). Communities within Communities – An ecosystem to support aging in place. Coventry University. [Communities within communities - an ecosystem to support ageing-in-place \(coventry.ac.uk\)](https://0-doi-org.aupac.lib.athabascau.ca/10.1016/j.gerinurse.2016.03.001)

Peng, D. X., Schroeder, R. G., & Shah, R. (2008). Linking routines to operations capabilities: A new perspective. *Journal of Operations Management*, 26(6), 730-748. <https://doi.org/https://doi.org/10.1016/j.jom.2007.11.001>

Perla, R. J., Bradbury, E., & Gunther-Murphy, C. (2013). Large-scale improvement initiatives in healthcare: a scan of the literature. *Journal for Healthcare Quality*, 35(1), 30-40. <https://doi.org/10.1111/j.1945-1474.2011.00164.x>

Pimentel, C. B., Mills, W. L., Snow, A. L., Palmer, J. A., Sullivan, J. L., Wewiorski, N. J., & Hartmann, C. W. (2020). Adapting Strategies for Optimal Intervention Implementation in Nursing Homes: A Formative Evaluation. *The Gerontologist*, 60(8), 1555-1565. <https://doi.org/10.1093/geront/gnaa025>

## EMBEDDING AIRBORNE INFECTION PREVENTION BEST PRACTICES IN LONG-TERM CARE HOMES: AN IMPLEMENTATION BLUEPRINT

Pisano, G.P. (1994), Knowledge, Integration, and the Locus of Learning: An Empirical Analysis of Process Development. *Strat. Mgmt. J.*, 15: 85-100. <https://0-doi-org.aupac.lib.athabascau.ca/10.1002/smj.4250150907>

Poels, J., Verschueren, M., Milisen, K., & Vlaeyen, E. (2020). Leadership styles and leadership outcomes in nursing homes: a cross-sectional analysis. *BMC Health Services Research*, 20, 1-10. <https://0-doi-org.aupac.lib.athabascau.ca/10.1186/s12913-020-05854-7>

Porritt, K., McArthur, A., Lockwood, C., & Munn, Z. (2023). JBI's approach to evidence implementation: a 7-phase process model to support and guide getting evidence into practice. *JBI Evidence Implementation*, 21(1), 3-13. <https://doi.org/10.1097/xeb.0000000000000361>

Portela, M. C., Pronovost, P. J., Woodcock, T., Carter, P., & Dixon-Woods, M. (2015). Republished: how to study improvement interventions: a brief overview of possible study types. *Postgraduate medical journal*, 91(1076), 343-354. <https://0-doi-org.aupac.lib.athabascau.ca/10.1136/postgradmedj-2014-003620rep>

Powell, B. J., Waltz, T. J., Chinman, M. J., Damschroder, L. J., Smith, J. L., Matthieu, M. M., ... & Kirchner, J. E. (2015). A refined compilation of implementation strategies: results from the Expert Recommendations for Implementing Change (ERIC) project. *Implementation science*, 10, 1-14. <https://0-doi-org.aupac.lib.athabascau.ca/10.1186/s13012-015-0209-1>

Proctor, E., Silmere, H., Raghavan, R., Hovmand, P., Aarons, G., Bunger, A., ... & Hensley, M. (2011). Outcomes for implementation research: conceptual distinctions, measurement challenges, and research agenda. *Administration and policy in mental health and mental health services research*, 38, 65-76. <https://0-doi-org.aupac.lib.athabascau.ca/10.1007/s10488-010-0319-7>

Provvidenza, C., Townley, A., Wincentak, J., Peacocke, S., & Kingsnorth, S. (2020). Building knowledge translation competency in a community-based hospital: a practice-informed curriculum for healthcare providers, researchers, and leadership. *Implementation science*, 15(1), 1-12. <https://doi.org/10.1186/s13012-020-01013-y>

Pronovost, P. J. (2011). Navigating adaptive challenges in quality improvement. *BMJ quality & safety*, 20(7), 560-563. <https://doi.org/10.1136/bmjqqs-2011-000026>

Provost, S. M., Lanham, H. J., Leykum, L. K., McDaniel Jr, R. R., & Pugh, J. (2015). Health care huddles: managing complexity to achieve high reliability. *Health care management review*, 40(1), 2-12. DOI: 10.1097/HMR.0000000000000009

## EMBEDDING AIRBORNE INFECTION PREVENTION BEST PRACTICES IN LONG-TERM CARE HOMES: AN IMPLEMENTATION BLUEPRINT

Rangachari, P. (2020). Understanding Evidence-Based Practice (EBP) Implementation in HCOs Through the Lens of Organizational Theory. *Journal of Healthcare Leadership*, 12, 35 – 48, DOI: [10.2147/JHL.S258472](https://doi.org/10.2147/JHL.S258472)

Rapport, F., Clay-Williams, R., Churruca, K., Shih, P., Hogden, A., & Braithwaite, J. (2018). The struggle of translating science into action: foundational concepts of implementation science. *Journal of evaluation in clinical practice*, 24(1), 117-126. <https://doi.org/10.1111/jep.12741>

Rapport, F., Smith, J., Hutchinson, K., Clay-Williams, R., Churruca, K., Bierbaum, M., & Braithwaite, J. (2021). Too much theory and not enough practice? The challenge of implementation science application in healthcare practice. *Journal of Evaluation in Clinical Practice*; 28: 991– 1002. <https://doi.org/10.1111/jep.13600>

Roberts, C., & Casey, D. (2004). An infection control link nurse network in the care home setting. *British Journal of Nursing*, 13(3), 166-170.  
<https://doi.org/10.12968/bjon.2004.13.3.12114>

Roberts, N. A., Janda, M., Stover, A. M., Alexander, K. E., Wyld, D., & Mudge, A. (2021). The utility of the implementation science framework “Integrated Promoting Action on Research Implementation in Health Services”(i-PARIHS) and the facilitator role for introducing patient-reported outcome measures (PROMs) in a medical oncology outpatient department. *Quality of Life Research*, 30(11), 3063-3071.

Roche, E., Jones, A., & Plunkett, A. (2024). What factors in the workplace enable success in antimicrobial stewardship in paediatric intensive care? An exploration of antimicrobial stewardship excellence through thematic analysis of appreciative inquiry interviews with healthcare staff. *BMJ open*, 14(2), <https://doi.org/10.1136/bmjopen-2023-074375>

Rock, D. (2009). *Managing with the brain in mind*. strategy+ business.  
<https://doi.org/https://www.strategy-business.com/article/09306>

Rogers, E. M. (2002). Diffusion of preventive innovations. *Addictive Behaviors*, 27(6), 989-993.  
[https://doi.org/https://doi.org/10.1016/S0306-4603\(02\)00300-3](https://doi.org/https://doi.org/10.1016/S0306-4603(02)00300-3)

Rowan, B. L., Anjara, S., De Brún, A., MacDonald, S., Kearns, E. C., Marnane, M., & McAuliffe, E. (2022). The impact of huddles on a multidisciplinary healthcare teams' work engagement, teamwork and job satisfaction: A systematic review. *Journal of Evaluation in Clinical Practice*, 28(3), 382-393. <https://doi.org/10.1111/jep.13648>

Rutten, J. E. R., Backhaus, R., PH Hamers, J., & Verbeek, H. (2022). Working in a Dutch nursing home during the COVID-19 pandemic: Experiences and lessons learned. *Nursing Open*, 9, 2710–2719. <https://doi.org/10.1002/nop2.970>

## EMBEDDING AIRBORNE INFECTION PREVENTION BEST PRACTICES IN LONG-TERM CARE HOMES: AN IMPLEMENTATION BLUEPRINT

Ryan, G. W., & Bernard, H. R. (2003). Techniques to identify themes. *Field methods*, 15(1), 85-109. <https://0-doi-org.aupac.lib.athabascau.ca/10.1177/1525822X02239569>

Rycroft-Malone J, Burton CR, Williams L, Edwards S, Fisher D, Hall B, *et al.* (2016). Improving skills and care standards in the support workforce for older people: a realist synthesis of workforce development interventions. *Health Soc Care Deliv Res*, 4(12). <https://doi.org/10.3310/hsdr04120>

Sadler, E., Sandall, J., Sevdalis, N., & Wilson, D. (2019). The contribution of implementation science to improving the design and evaluation of integrated care programmes for older people with frailty: Managing Community Care [The contribution of implementation science]. *Journal of Integrated Care*, 27(3), 232-240. <https://doi.org/10.1108/JICA-07-2018-0048>

Saint, S., Howell, J., & Krein, S. (2010). Implementation science: how to jumpstart infection prevention. *Infection Control and Hospital Epidemiology: The Official Journal of the Society of Hospital Epidemiologists of America*, 31(Suppl 1), S14 – S17. <https://doi.org/10.1086/655991>

Sampson, H. (2004). Navigating the waves: The usefulness of a pilot in qualitative research. *Qualitative research*, 4(3), 383-402. <https://0-doi-org.aupac.lib.athabascau.ca/10.1177/1468794104047236>

Sandberg, J., & Alvesson, M. (2011). Ways of constructing research questions: gap-spotting or problematization. *Organization*, 18(1), 23-44. <https://0-doi-org.aupac.lib.athabascau.ca/10.1177/1350508410372151>

Saunders, B., Sim, J., Kingstone, T., Baker, S., Waterfield, J., Bartlam, B., ... & Jinks, C. (2018). Saturation in qualitative research: exploring its conceptualization and operationalization. *Quality & quantity*, 52, 1893-1907. <https://0-doi-org.aupac.lib.athabascau.ca/10.1007/s11135-017-0574-8>

Savundranayagam, M. Y., Docherty-Skippen, S. M., & Basque, S. R. (2021). Qualitative Insights into the Working Conditions of Personal Support Workers in Long-Term Care in the Context of a Person-Centered Communication Training Intervention. *Research in Gerontological Nursing*, 14(5), 245–253. <https://doi.org/10.3928/19404921-20210708-01>

Schlegal Villages (2024). Position Description for Temporary Assistant Director of Nursing ADNC – RN – Infection Prevention and Control (IPAC). <https://na01.safelinks.protection.outlook.com/?url=https%3A%2F%2Fca.indeed.com%2Fviewjob%3Fjk%3D8f22d8f6ab81b1f8&data=05%7C02%7C%7C27dada5cd97241c2248a08dc4055f849%7C84df9e7fe9f640afb435aaaaaaaaaaa%7C1%7C0%7C638455985176150690%7CUnknown%7CTWFpbGZsb3d8eyJWIjoiMC4wLjAwMDAiLCJQIjoiV2luMzliLCJBTiI6Ik1haWwiLCJXVCi6Mn0%3D%7C0%7C%7C%7C&sdata=u48AvS8YQ66hJHEOQ5HaMTly%2BvVsaeAJUxV8D97SefQ%3D&reserved=0>

## EMBEDDING AIRBORNE INFECTION PREVENTION BEST PRACTICES IN LONG-TERM CARE HOMES: AN IMPLEMENTATION BLUEPRINT

Siegel, E. O., & Young, H. M. (2020). Assuring Quality in Nursing Homes: The Black Box of Administrative and Clinical Leadership—A Scoping Review. *The Gerontologist*, 61(4), e147-e162. <https://doi.org/10.1093/geront/gnaa175>

Seers, K., Rycroft-Malone, J., Cox, K., Crichton, N., Edwards, R. T., Eldh, A. C., ... & Wallin, L. (2018). Facilitating Implementation of Research Evidence (FIRE): an international cluster randomised controlled trial to evaluate two models of facilitation informed by the Promoting Action on Research Implementation in Health Services (PARIHS) framework. *Implementation Science*, 13, 1-11. <https://doi.org/10.1186/s13012-018-0831-9>

Shakir, M., & ur Rahman, A. (2022). Conducting pilot study in a qualitative inquiry: Learning some useful lessons. *Journal of Positive School Psychology*, 6(10), 1620-1624. <https://mail.journalppw.com/index.php/jpsp/article/view/13459/8727>

Schumacher, Patrick, "A Study of Regulatory Compliance in U.S. Nursing Homes" (2025). *Electronic Theses & Dissertations (2024 - present)*. 115. <https://scholarsarchive.library.albany.edu/etd/115>

Silverberg, S. L., Puchalski Ritchie, L. M., Gobat, N., & Murthy, S. (2022). Canadian intensive care nurses' infection prevention and control adherence and institutional trust: An update 1-year into the pandemic. *Canadian Journal of Critical Care Nursing*, 33(2). DOI: 10.5737/23688653-3312229

Singer, S. J., Benzer, J. K., & Hamdan, S. U. (2015). Improving health care quality and safety: the role of collective learning. *Journal of Healthcare Leadership*, 7, 91 - 107. DOI: [10.2147/JHL.S70115](https://doi.org/10.2147/JHL.S70115)

Smith, K. M., Castle, N. G., & Hyer, K. (2013). Implementation of Quality Assurance and Performance Improvement Programs in Nursing Homes: A Brief Report. *Journal of the American Medical Directors Association*, 14(1), 60-61. <https://doi.org/https://doi.org/10.1016/j.jamda.2012.09.010>

Sopirala, M. M., Yahle-Dunbar, L., Smyer, J., Wellington, L., Dickman, J., Zikri, N., Martin, J., Kulich, P., Taylor, D., Mekhjian, H., Nash, M., Mansfield, J., Pancholi, P., Howard, M., Chase, L., Brown, S., Kipp, K., Lefeld, K., Myers, A., . . . Mangino, J. E. (2014). Infection Control Link Nurse Program: An interdisciplinary approach in targeting health care-acquired infection. *American journal of infection control*, 42(4), 353-359. <https://doi.org/https://doi.org/10.1016/j.ajic.2013.10.007>

Sorrell, E., Schrauwen, E., Linster, M., Graff, M., Herfst, S., & Ram, F. (2011). Predicting 'airborne' influenza viruses: (trans-) mission impossible? *Current Opinion in Virology* 1(6) , 635-642. <https://doi.org/10.1016/j.coviro.2011.07.003>

## EMBEDDING AIRBORNE INFECTION PREVENTION BEST PRACTICES IN LONG-TERM CARE HOMES: AN IMPLEMENTATION BLUEPRINT

Sreeramoju, P. (2019). Reducing infections “together”: a review of socioadaptive approaches. In *Open Forum Infectious Diseases*, 6 (2), 1-7. <https://doi.org/10.1093/ofid/ofy348>

Standiford, T., Conte, M. L., Billi, J. E., Sales, A., & Barnes, G. D. (2020). Integrating lean thinking and implementation science determinants checklists for quality improvement: a scoping review. *American Journal of Medical Quality*, 35(4), 330-340. <https://0-doi-org.aupac.lib.athabascau.ca/10.1177/1062860619879746>

Straus, S. E., Tetroe, J., & Graham, I. (2009). Defining knowledge translation. *Cmaj*, 181(3-4), 165-168. <https://doi.org/10.1503/cmaj.081229>

Stolee, P., Esbaugh, J., Aylward, S., Cathers, T., Harvey, D. P., Hillier, L. M., Keat, N., & Feightner, J. W. (2005). Factors Associated With the Effectiveness of Continuing Education in Long-Term Care. *The Gerontologist*, 45(3), 399-405. <https://doi.org/10.1093/geront/45.3.399>

Tacconelli, E., & Pezzani, M. D. (2019). Public health burden of antimicrobial resistance in Europe. *The Lancet Infectious Diseases*, 19(1), 4-6. [https://doi.org/10.1016/S1473-3099\(18\)30648-0](https://doi.org/10.1016/S1473-3099(18)30648-0)

Takahashi, I., & Turale, S. (2010). Evaluation of individual and facility factors that promote hand washing in aged-care facilities in Japan. *Nursing & health sciences*, 12(1), 127-134. <https://0-doi-org.aupac.lib.athabascau.ca/10.1111/j.1442-2018.2009.00509.x>

Tan, K. W., Ong, H. K., & Mok, U. S. (2021). Using simulation and inter-professional education to teach infection prevention during resuscitation. *The Asia Pacific Scholar*, 6(1), 93-108. <https://doi.org/10.29060/TAPS.2021-6-1/OA2229>

Taylor, J. A., Parmelee, P., Brown, H., Strothers, H. S., Capezuti, E., & Ouslander, J. G. (2007). A Model Quality Improvement Program for the Management of Falls in Nursing Homes. *Journal of the American Medical Directors Association*, 8(3, Supplement), S26-S36. <https://doi.org/https://doi.org/10.1016/j.jamda.2006.11.005>

The Beryl Institute Website, Defining Patient Experience. <http://www.theberylinstitute.org/?page=definitionpatientexp>. Accessed November 12, 2022

Thies, K., Schiessl, A., Khalid, N., Hess, A. M., Harding, K., & Ward, D. (2020). Evaluation of a learning collaborative to advance team-based care in Federally Qualified Health Centers. *BMJ Open Quality*, 9(3), e000794. doi: 10.1136/bmjoq-2019-000794

Thompson, B. L., Dwyer, D. M., Ussery, X. T., Denman, S., Vacek, P., & Schwartz, B. (1997). Handwashing and glove use in a long-term-care facility. *Infection Control & Hospital Epidemiology*, 18(2), 97-103. <https://doi.org/10.1086/647562>

## EMBEDDING AIRBORNE INFECTION PREVENTION BEST PRACTICES IN LONG-TERM CARE HOMES: AN IMPLEMENTATION BLUEPRINT

Thompson, D. S., Caccamo, B., & Thompson, A. P. (2021). Not one and the same: How personal support workers, licensed practical nurses, and registered nurses enact collaboration in long-term care. *Health, Interprofessional Practice and Education*, 4(2).

Travers, J., Herzig, C. T. A., Pogorzelska-Maziarz, M., Carter, E., Cohen, C. C., Semeraro, P. K., Bjarnadottir, R. I., & Stone, P. W. (2015). Perceived barriers to infection prevention and control for nursing home certified nursing assistants: A qualitative study. *Geriatric Nursing*, 36(5), 355-360. <https://doi.org/https://doi.org/10.1016/j.gerinurse.2015.05.001>

van Buijten, A., & Foster, D. (2019). Does a hospital culture influence adherence to infection prevention and control and rates of healthcare associated infection? A literature review. *Journal of infection prevention*, 20(1), 5-17. <https://0-doi-org.aupac.lib.athabascau.ca/10.1177/1757177418805833>

Voss, A., & Widmer, A. F. (1997). No time for handwashing!? Handwashing versus alcoholic rub can we afford 100% compliance? *Infection Control & Hospital Epidemiology*, 18(3), 205-208. <https://doi.org/10.1086/647590>

Walsh, K., & Kowanko, I. (2002). Nurses' and patients' perceptions of dignity. *International journal of nursing practice*, 8(3), 143-151. <https://0-doi-org.aupac.lib.athabascau.ca/10.1046/j.1440-172X.2002.00355.x>

Wang H, Li T, Barbarino P, Gauthier S, Brodaty H, Molinuevo JL, et al. (2020). Dementia care during COVID-19. *Lancet*. 395: 1190–1. DOI: [10.1016/S0140-6736\(20\)30755-8](https://doi.org/10.1016/S0140-6736(20)30755-8)

Wang, Y., & Ji, Y. (2021). How do they learn: types and characteristics of medical and healthcare student engagement in a simulation-based learning environment. *BMC Medical Education*, 21(1), 1-13. <https://doi.org/https://doi.org/10.1186/s12909-021-02858-7>

Ward, M. E., De Brún, A., Beirne, D., Conway, C., Cunningham, U., English, A., Fitzsimons, J., Furlong, E., Kane, Y., & Kelly, A. (2018). Using co-design to develop a collective leadership intervention for healthcare teams to improve safety culture. *International Journal of Environmental Research and Public Health*, 15(6), 1182. <https://doi.org/10.3390/ijerph15061182>

Wen, A., Gatchell, G., Tachibana, Y., Tin, M. M., Bell, C., Koijane, J., Zeri, K., & Masaki, K. (2012). A Palliative Care Educational Intervention for Frontline Nursing Home Staff: The IMPRESS Project. *Journal of Gerontological Nursing*, 38(10), 20-25. <https://doi.org/doi:10.3928/00989134-20120906-96>

West, M. A., Borrill, C. S., Dawson, J. F., Brodbeck, F., Shapiro, D. A., & Haward, B. (2003). Leadership clarity and team innovation in health care. *The Leadership Quarterly*, 14(4-5), 393-410. [https://doi.org/https://0-doi-org.aupac.lib.athabascau.ca/10.1016/S1048-9843\(03\)00044-4](https://doi.org/https://0-doi-org.aupac.lib.athabascau.ca/10.1016/S1048-9843(03)00044-4)

White, K. M., Jimmieson, N. L., Obst, P. L., Graves, N., Barnett, A., Cockshaw, W., Gee, P., Haneman, L., Page, K., Campbell, M., Martin, E., & Paterson, D. (2015). Using a theory

## EMBEDDING AIRBORNE INFECTION PREVENTION BEST PRACTICES IN LONG-TERM CARE HOMES: AN IMPLEMENTATION BLUEPRINT

of planned behaviour framework to explore hand hygiene beliefs at the ‘5 critical moments’ among Australian hospital-based nurses. *BMC Health Services Research*, 15(1), 59. <https://doi.org/10.1186/s12913-015-0718-2>

Williams-McBean, C. T. (2019). The value of a qualitative pilot study in a multi-phase mixed methods research. *The Qualitative Report*, 24(5), 1055-1064. DOI: 10.46743/2160-3715/2019.3833

Wilson, J., (2014). *Essentials of Business Research. A Guide to Doing Your Research Project*, Sage publications.

Wilson, K. A., Burke, C. S., Priest, H. A., & Salas, E. (2005). Promoting health care safety through training high reliability teams. *BMJ quality & safety*, 14(4), 303-309. <https://doi.org/10.1136/qshc.2004.010090>

Wolf, J. A., Niederhauser, V., Marshburn, D., & LaVela, S. L. (2021). Reexamining “Defining Patient Experience”: the human experience in healthcare. *Patient Experience Journal*, 8(1), 16-29. doi: 10.35680/2372-0247.1594

Wray, J., Archibong, U., & Walton, S. (2017). Why undertake a pilot in a qualitative PhD study? Lessons learned to promote success. *Nurse researcher*, 24(3). doi: 10.7748/nr.2017.e1416

Yapa, H.M., & Bärnighausen, T., (2018) Implementation science in resource-poor countries and communities. *Implementation Science* 13, (154), 1-13. <https://doi.org/10.1186/s13012-018-0847-1>

Zhou, J., & Deneen, C. (2020). ‘Sandwiched’ or ‘filtering’: middle leaders’ agency in innovation enactment. *Journal of Higher Education Policy and Management*, 42(3), 332-346. <https://doi.org/10.1080/1360080X.2020.1736778>

Zinatsa, F., Engelbrecht, M., van Rensburg, A. J., & Kigozi, G. (2018). Voices from the frontline: barriers and strategies to improve tuberculosis infection control in primary health care facilities in South Africa. *BMC health services research*, 18, 1-12. <https://doi.org/10.1186/s12913-018-3083-0>

### Appendix A - Semi-Structured Interview Questions

The following lists the questions considered as tools to uncover insights into the mechanisms that mediate best practice integration among front-line LTC home workers. These questions support my overall research question and the four following pillars of focus:

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- A. Change strategies to introduce new evidence-informed guidelines.
- B. Leaders' facilitation abilities to implement change.
- C. Mechanisms and tools to implement change.
- D. Sustaining and standardization the change.

Questions:

Opening Questions:

Tell me about yourself. How long have you worked at the LTC home? How many years have you been a manager or nursing lead in the organization? How long have you worked in the present nursing unit? Do you live in the local community?

Study Questions:

- From your perspective and experience, how does the organization advance the introduction of new infection prevention guidelines to your unit's workforce? Prompting statements: Tell me more about that. Can you give me an example? Could it have been handled better? (Change Strategies Question)
- From your personal experience as a leader, can you tell me what approaches work well when implementing infection prevention best practices to your unit's workforce? Prompting Statements: Tell me more about that. What were your intentions? Is there something that stands out? (Change Strategies and Leadership Question)
- Can you tell me how you ensure that your staff continue to maintain the infection practices that were introduced to them? Prompting Statements: How do you personally know that it happened? What led you to that conclusion? (Sustaining and Standardization Question)
- Can you describe how ongoing compliance with infection prevention is evaluated by the organization? Prompting Statements: What did you observe from the process? How well was it evaluated? What came of the evaluation? (Sustaining and Standardization Question)

## EMBEDDING AIRBORNE INFECTION PREVENTION BEST PRACTICES IN LONG-TERM CARE HOMES: AN IMPLEMENTATION BLUEPRINT

- Can you describe any tools or mechanisms that you find work well when introducing infection prevention best practices? Prompting Statements: Can you give me an example? What did you learn from the process? How could it still be improved? (Mechanism or Tools Question)
- From your perspective, are there any operational barriers that inhibit the transfer of best practices? Prompting Statements: Can you be more specific? How do the operational barriers manifest? Is one barrier more prevalent or impactful than another? (All Pillars Question)
- Anything you would like to add or is missing from this discussion?

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## Appendix B - Proposed Cover Letter to the Prospective LTC Home

The following is an example of a cover letter that introduced the research initiative to the targeted nursing homes.

### INVITATION TO PARTICIPATE

*'How to Embed Best Practices for Airborne Infection Prevention: A Blueprint for Implementation Approaches in Rural Long Term Care Homes'*

*Fall 2024 – Spring 2025*

**Principle Investigator (Researcher):**  
*Ralph Ganter, Doctor of Business Administration Student*

My name is Ralph Ganter, and I am a Doctor of Business Administration student at Athabasca University. As a requirement to complete the degree, I am conducting a research study on implementation approaches of nursing unit leaders. I am interested in speaking with nursing unit leaders who engage with front-line staff to understand how infection prevention protocols are implemented in front-line staff. I am conducting this research work under the supervision of Dr. Kam Jugdev.

The purpose of this research work is to better understand the essential implementation approaches or factors required to enable the transfer of best practices in infection control evidence into frontline worker's practices. Through an understanding of the strategies of organizations such as yours, and specifically your nursing unit leaders, it is anticipated that leading approaches will be identified that assist in the future dissemination of infection prevention initiatives as well as the sustained integration of best practices into frontline workers' behaviours.

## EMBEDDING AIRBORNE INFECTION PREVENTION BEST PRACTICES IN LONG-TERM CARE HOMES: AN IMPLEMENTATION BLUEPRINT

Your organization is being asked to participate in a research study entitled “How to Embed Best Practices for Airborne Infection Prevention: A Blueprint for Implementation Approaches in Rural Long-Term Care Homes”. This document is part of a process to generate informed consent. If your organization chooses to participate, the information below provides insight into the research purpose, the participation level, and your organization’s right to withdraw from the study at any time.

This research will involve having nursing unit leaders respond to questions in person or on Microsoft Teams. The questions will seek to provide oral responses and will involve a 45 to 60-minute interview. The interview will be arranged at your site at a convenient time for your practitioners. The focus of the questions will be on the operating context of the home; the activities of dissemination of best practice guidelines; and the varied strategies and tactics used by leaders to 1) disseminate the best practice knowledge, 2) embed the knowledge, 3) sustain the best practices gained; and finally, 4) invite suggestions for improved best practice integration based on the leader’s experience.

This research should benefit the academic community and the LTC home community by providing an increased knowledge of how to inform best practices integration into the frontline workforce.

Further, I do not foresee any risk to your organization as it participates in this research. All information will be anonymous, coded and stored in a password-protected location. Your organization’s participation is voluntary, and the organization can withdraw at any time in this process. However, your organization can no longer withdraw when the interviews are completed.

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A separate invitation to participate in this research study will be forwarded to your nursing unit leaders. Responses from the nursing unit leaders will be encoded in such a way that their remarks will be unidentifiable and anonymous.

Thank you for taking the time to consider participating in this research work. If interested in assisting with this study, or if you have any questions or concerns, please e-mail: [rganter1@learn.athabascau.ca](mailto:rganter1@learn.athabascau.ca) Your responses will be kept confidential.

Ralph Ganter  
Cell Phone - 548-997-8891

**“This project will reviewed by the Athabasca University Ethics Board”**

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## Appendix C - Proposed Invitation to Participate for Nursing Unit Leaders

The following is an example of an invitation which introduces the research initiative to potential nursing unit leader respondents.

### INVITATION TO PARTICIPATE

*'How to Embed Best Practices for Airborne Infection Prevention: A Blueprint for Implementation Approaches in Rural Long Term Care Homes'*

*Fall 2024 – Spring 2025*

Principal Investigator (Researcher):  
*Ralph Ganter*

Supervisor:  
*Dr. Kam Jugved*

My name is Ralph Ganter and I am a Doctor of Business Administration student at Athabasca University. As a requirement to complete my degree, I am conducting a research study on implementation approaches of nursing unit leaders. I am interested in speaking with nursing unit leaders who engage with front-line staff to understand how infection prevention protocols are implemented in front-line staff. I am conducting this project under the supervision of Dr. Kam Jugved.

I invite you to participate in this project because you are a nursing unit leader with key roles and responsibilities in a LTC home. As a nursing unit leader, you enable the transfer and integration of best practices into your front-line staff. Your influence and judgements are key to this research study.

The purpose of this research project is to better understand the essential implementation approaches or factors required to enable the transfer of best practices in infection control evidence into frontline worker's practices. Through an understanding of the strategies of your organization, and specifically you as a nursing unit leader, it is anticipated that leading approaches will be identified that assist in the future dissemination of infection prevention initiatives as well as the sustained integration of best practices into frontline workers' behaviours.

Your participation in this project would involve responding to a series of questions either in person or on Microsoft Teams. The questions will provide the opportunity for responses that are oral. The focus of the questions will be on the operating context of the LTC home; the activities of dissemination of best practice guidelines; and the varied strategies and tactics used by leaders such as yourself to 1) disseminate the best practice knowledge, 2) embed the knowledge, 3) sustain the best practices gained; and finally, 4) invite suggestions for improved

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best practice integration based on your experience. The session should take between 45 to 60 minutes of your time. The interview will be arranged at a time and place convenient to you. You will also have an opportunity to review the transcript and clarify any comments that you made.

All information you provide during the study will be recorded and encoded in such a way that your remarks will be unidentifiable and anonymous. The data will be stored electronically on a password-protected USB drive. Any paper versions of the information will be stored in a locked file cabinet and then destroyed as per university policy.

The benefits of your participation include being part of new information that will be gained from creating new knowledge. This new information is expected to enhance patient care, patient outcomes, and the nature of managing change within a LTC home.

I do not anticipate you will face any risks as a result of participating in this research.

Thank you for considering this invitation. If you have any questions or would like more information, please contact me, (the principal investigator) by e-mail [rganter1@learn.athabascau.ca](mailto:rganter1@learn.athabascau.ca) or by phone at 548-997-8891 or my supervisor by e-mail [kamj@athabascau.ca](mailto:kamj@athabascau.ca).

Thank you.

*Ralph Ganter*

**This project has been reviewed by the Athabasca University Research Ethics Board. Should you have any comments or concerns about your treatment as a participant, the research, or ethical review processes, please contact the Research Ethics Officer by e-mail at [rebsec@athabascau.ca](mailto:rebsec@athabascau.ca) or by telephone at 780.213.2033.**

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## Appendix D - Informed Consent

### LETTER OF INFORMATION / INFORMED CONSENT FORM

*How to Embed Best Practices for Airborne Infection Prevention: A Blueprint for Implementation*

*Approaches in Rural Long-Term Care Homes*

*Fall 2024 – Spring 2025*

**Principal Investigator (Researcher):**

Ralph Ganter

[Rganter1@learn.athabascau.ca](mailto:Rganter1@learn.athabascau.ca)

**Supervisor:**

Dr. Kam Jugved

[kamj@athabascau.ca](mailto:kamj@athabascau.ca)

You are invited to take part in a research project entitled 'How to Embed Best Practices for Airborne Infection Prevention: A Blueprint for Implementation Approaches in Rural Long-Term Care Homes'

This form is part of the process of informed consent. The information presented should give you the basic idea of what this research is about and what your participation will involve, should you choose to participate. It also describes your right to withdraw from the project. In order to decide whether you wish to participate in this research project, you should understand enough about its risks, benefits and what it requires of you to be able to make an informed decision. This is the informed consent process. Take time to read this carefully as it is important that you understand the information given to you. Please contact the principal investigator, Ralph Ganter if you have any questions about the project or would like more information before you consent to participate.

It is entirely up to you whether or not you take part in this research. If you choose not to take part, or if you decide to withdraw from the research once it has started, there will be no negative consequences for you now, or in the future.

#### Introduction

My name is Ralph Ganter and I am a Doctor of Business Administration student at Athabasca University. As a requirement to complete my degree, I am conducting a research project about the implementation approaches of nursing unit leaders as it pertains to infection prevention practices. I am interested in speaking with nursing unit leaders who engage with front-line staff to understand how infection prevention protocols are implemented in front-line staff. I am conducting this project under the supervision of Dr. Kam Jugved.

## EMBEDDING AIRBORNE INFECTION PREVENTION BEST PRACTICES IN LONG-TERM CARE HOMES: AN IMPLEMENTATION BLUEPRINT

### **Why are you being asked to take part in this research project?**

You are being invited to participate in this project because you are a nursing unit leader with key roles and responsibilities in a LTC home. As a nursing unit leader, you enable the transfer and integration of best practices into your front-line staff. Your influence and judgements are key to this research study.

### **What is the purpose of this research project?**

The purpose of this research project is to better understand the essential implementation approaches or factors required to enable the transfer of best practices in infection control evidence into frontline worker's practices. Through an understanding of the strategies of your organization, and specifically you as a nursing unit leader, it is anticipated that leading approaches will be identified that assist in the future dissemination of infection prevention initiatives as well as the sustained integration of best practices into frontline workers' behaviours.

### **What will you be asked to do?**

This research work will involve responding to a series of questions either in person or on Microsoft Teams. The questions will provide for oral responses. The focus of the questions will be on the operating context of the home; the activities of dissemination of best practice guidelines; and the varied strategies and tactics used by leaders such as yourself to 1) disseminate the best practice knowledge, 2) embed the knowledge, 3) sustain the best practices gained; and finally, 4) invite suggestions for improved best practice integration based on your experience. The interview will be arranged at a time and place convenient to you. A follow-up conversation will be scheduled to review the interview transcript and allow the opportunity to alter or clarify your comments.

### **What are the risks and benefits?**

I do not anticipate that you will face any risks through your participation in this research. Though your responses will be recorded, confidentiality is an important principle for this research. Your responses will be encoded in such a way that your remarks will be unidentifiable and anonymous as well as aggregated or summarized. There are no direct benefits to you as a participant.

### **Do you have to take part in this project?**

As stated earlier in this letter, involvement in this project is entirely voluntary. You may choose to stop participating at before or during the interview. If you choose to stop participating, your

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information will be destroyed immediately. However, once the interview is completed you will no longer be able to withdraw. Your decision not to participate or to withdraw during the interview will not have any personal impact or impact on the organization.

### **How will your privacy and confidentiality be protected?**

The ethical duty of confidentiality includes safeguarding participants' identities, personal information, and data from unauthorized access, use or disclosure.

All information you provide as a result of your participation in this research will be held in confidence. All interviews will be recorded on a handheld device and the audio recordings will be saved on a password-protected computer. After the interviews are recorded, they will be transcribed. This data will be only available to the researchers in output files that will be password protected. Confidentiality will be provided to the fullest extent possible by law. All information will be kept confidential and will not be shared with your organization. Further, *all information will be held confidential, except when legislation or a professional code of conduct requires that it be reported*

### **How will my anonymity be protected?**

Anonymity refers to protecting participants' identifying characteristics, such as name or description of physical appearance. Your consent, name, and information will not appear in any report or publication of the research. Data will be stored for a minimum of five years, at which point it will be deleted from researchers' computers. Every reasonable effort will be made to ensure your anonymity; you will not be identified in publications without your explicit permission.

### **How will the data collected be stored?**

All data will be stored in a password-protected computer and USB drive. Any written data will be stored in a locked file cabinet. Data will be destroyed after 5 years. No other persons or agencies will have access to the collected data.

This study may use Microsoft Teams to collect data, which is an externally hosted cloud-based service. When information is transmitted over the internet privacy cannot be guaranteed. There is always a risk your responses may be intercepted by a third party (e.g., government agencies, hackers). Further, while the researcher(s) will not collect or use IP address or other information which could link your participation to your computer or electronic devices without informing you, there is a small risk with any platform such as this of data that is collected on external servers falling outside the control of the research team. If you are concerned about this, we would be happy to make alternative arrangements (where possible) for you to participate, perhaps via telephone. Please contact Ralph Ganter for further information.

### **Who will receive the results of the research project?**

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The existence of the research will be listed in an abstract posted online at the Athabasca University Library's Digital Thesis and Project Room and the final research paper will be publicly available.

### **Who can you contact for more information or to indicate your interest in participating in the research project?**

Thank you for considering this invitation. If you have any questions or would like more information, please contact me, Ralph Ganter by e-mail [rganter1@learn.athabascau.ca](mailto:rganter1@learn.athabascau.ca) or by text at 548-997-8891 or my supervisor by e-mail address [kamj@athabascau.ca](mailto:kamj@athabascau.ca). If you are ready to participate in this project, please complete and sign the attached Consent Form and return it to me at the time of the interview.

Thank you.

*Ralph Ganter*

**This project has been reviewed by the Athabasca University Research Ethics Board.**

**Should you have any comments or concerns about your treatment as a participant, the research, or ethical review processes, please contact the Research Ethics Officer by e-mail at [rebsec@athabascau.ca](mailto:rebsec@athabascau.ca) or by telephone at 780.213.2033.**

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### **Informed Consent:**

**Your signature on this form means that:**

- You have read the information about the research project.
- You have been able to ask questions about this project.
- You are satisfied with the answers to any questions you may have had.
- You understand what the research project is about and what you will be asked to do.
- You understand that you are free to withdraw your participation in the research project without having to give a reason, and that doing so will not affect you now, or in the future.
- You understand that if you choose to end your participation **during** data collection, any data collected from you up to that point will be destroyed.
- You understand that your data is being collected anonymously, and therefore cannot be removed once the data collection has ended.

	<b>YES</b>	<b>NO</b>
I agree to be audio-recorded	<input type="radio"/>	<input type="radio"/>
I agree to be video-recorded	<input type="radio"/>	<input type="radio"/>
I agree to the use of direct quotations	<input type="radio"/>	<input type="radio"/>
I agree to the use of audio recordings in dissemination	<input type="radio"/>	<input type="radio"/>
I agree to the use of video recordings in dissemination	<input type="radio"/>	<input type="radio"/>
I am willing to be contacted following the interview to verify that my comments are accurately reflected in the transcript.	<input type="radio"/>	<input type="radio"/>

**Your signature confirms:**

- You have read what this research project is about and understood the risks and benefits. You have had time to think about participating in the project and had the opportunity to ask questions and have those questions answered to your satisfaction.
- You understand that participating in the project is entirely voluntary and that you may end your participation at any time without any penalty or negative consequences.
- You have been given a copy of this Informed Consent form for your records; and
- You agree to participate in this research project.

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Signature of Participant

Date

Principal Investigator's Signature:

I have explained this project to the best of my ability. I invited questions and responded to any that were asked. I believe that the participant fully understands what is involved in participating in the research project, any potential risks and that he or she has freely chosen to participate.

---

Signature of Principal Investigator

Date

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**Appendix E -LTC Home Recruitment Results**

LTC home	E-mail	Voicemail	Personal Visit	No Response	No	Yes
LTC home 1	X	X				X
LTC home 2	X					X
LTC home 3	X					X
LTC home 4	X	X				X
LTC home 5	X	X			X	X
LTC home 6	X	X				X
LTC home 7	X	X				X
LTC home 8	X	X				X
LTC home 9	X	X				X
LTC home 10	X	X	X	X		
LTC home 11	X	X				X
LTC home 12	X	X				X
LTC home 13	X	X	X		X	
LTC home 14	X	X	X			X
LTC home 15	X	X		X		
LTC home 16	X	X	X		X	
LTC home 17	X	X		X		
LTC home 18	X	X		X		
LTC home 19	X	X		X		
LTC home 20	X	X		X		
LTC home 21	X	X				X

To summarize Appendix A, 21 LTC homes were contacted, with 13 (or 62%) of the LTC homes agreeing to participate in my research.

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**Appendix F – Saturation Calculations**

***Saturation Calculations from 20 Participants***

	Codes for the first 14 interviews	0015 New Codes	0016 New Codes	0017 New Codes	0018 New Codes	0019 New Codes	0020 New Codes	Total New Codes	Total Codes
Research Question 1	31	1	1	1	0	1	0	4	35
Research Question 2	34	2	0	0	0	1	1	4	38
Research Question 3	29	1	1	0	0	1	0	3	32
Research Question 4	22	2	1	1	0	0	0	4	26
Research Question 5	35	3	0	0	0	1	1	5	40
Research Question 6	31	0	0	1	0	0	1	2	33
Research Question 7	25	1	2	0	0	0	0	3	28
Subthemes categorized from RQs								New Subthemes	
Research Questions 1 – 7	28	0	0	0	0	0	0	0	28

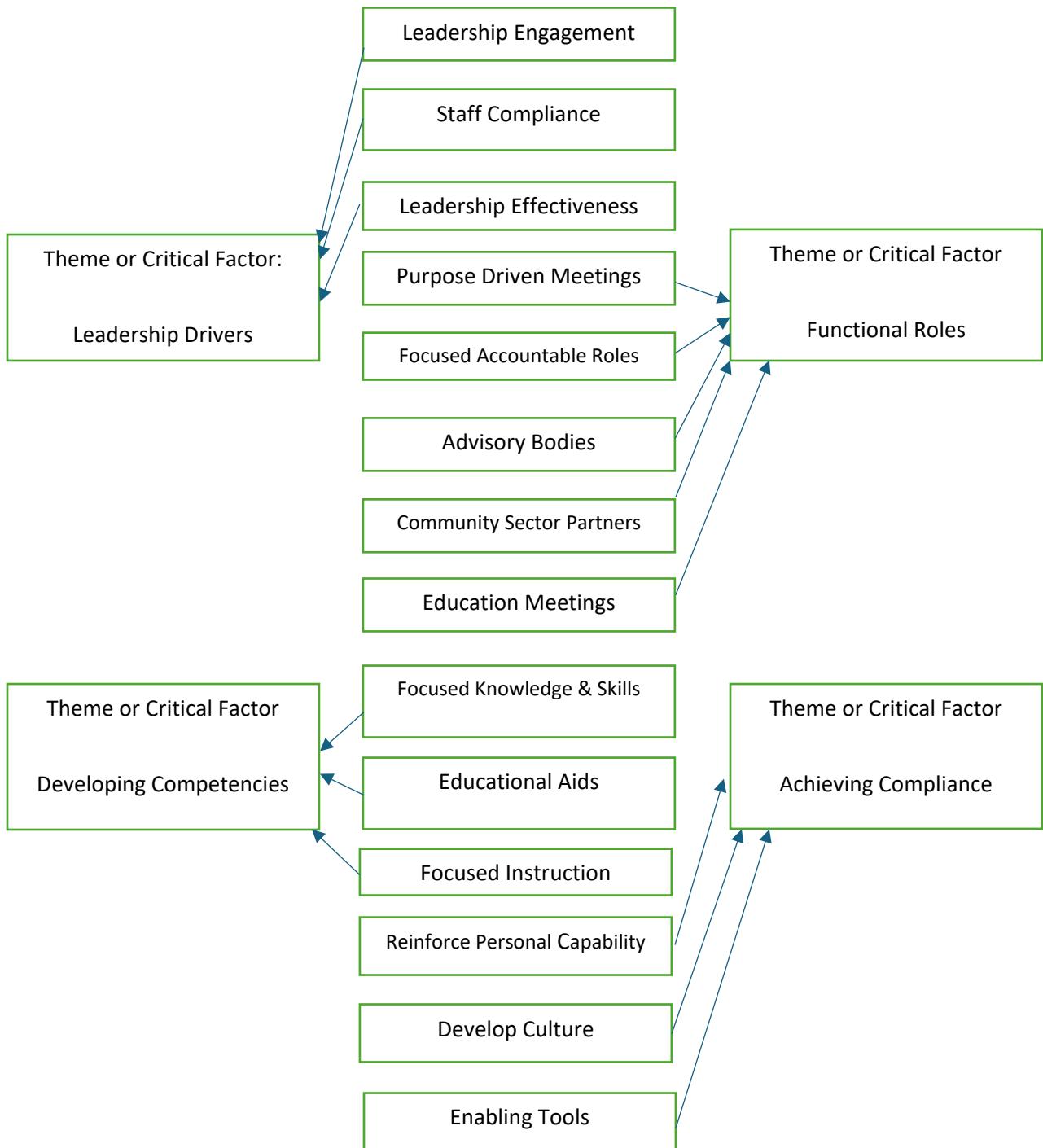
**Comments**

No new subthemes were developed post the 14<sup>th</sup> interview. A total of 25 new codes (or 12% of all codes) were created in the last 6 interviews (or 30% of the interviews).

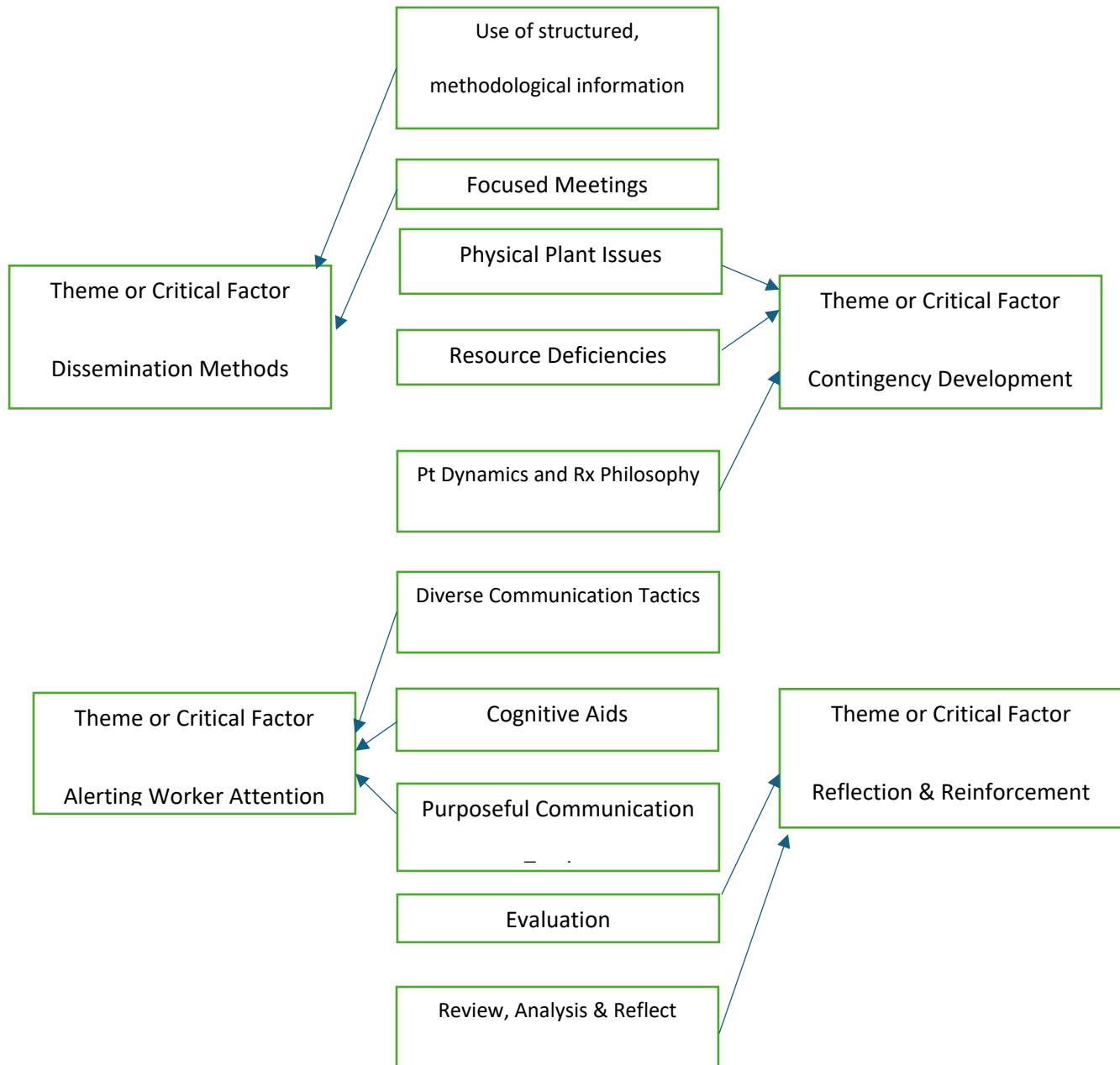
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**Appendix G- Subthemes to Theme Map**

Linking Subthemes to Themes or Critical Factors



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## Appendix H – Detailed Literature Review in Light of Findings

The following narrative presents a brief analysis of the literature in relation to the critical factors (themes) synthesized from participant responses.

### ***Literature Review Comments on Leadership in LTC Homes***

Examining the nursing home literature on leadership found some parallel insights.

Backman et al. (2017) found that coaching conversations have a positive relationship with staff's use of research and increased use of research instruments. Backman et al. (2017) described five behaviours of highly effective nursing leadership as: experimenting with new ideas, controlling work, relying on subordinates, coaching and giving direct feedback, and handling conflict constructively. This echoes Havig et al.'s (2011) research that delivered insights into the relationships between job satisfaction and relationship-oriented leadership styles. Havig et al. (2011) described relationship-oriented leadership characteristics as supporting, developing and recognizing (appreciating). Of note, Havig et al. (2011) identified task-oriented leadership through characteristics such as (what to do, how to do it, when to do it, and who will do it).

Siegal et al. (2021) noted that leadership is vitally important to ensure quality, safety, and to manage the dynamic LTC organization. This included a focus on workforce development to achieve the desired outcomes. Boakye-Dankwa et al. (2017) echoed these findings and linked better patient outcomes with higher job satisfaction and engagement. Boakye-Dankwa et al. (2017) supported higher staff ratios and, interestingly, encouraged appropriate use of sick hours as a form of self-determined respite.

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Finally, Backman et al. (2017) work concluded the importance of leadership competence as a requirement to support staff through specific actions such as infection prevention practice improvement.

### **The literature's perspective on focused functional roles and purpose-focused teams in LTC homes**

The literature on focused functional roles and purpose-focused teams in LTC homes echoed a number of the insights provided by the participants of the study. Fallon et al. (2020) suggested that implementation required a clearly developed governance and leadership role in nursing homes, while Giri et al. (2021) recommended delegating tasks and an internal infrastructure that can respond to events on scale and can provide staff support.

Rutter et al. (2021) observed the loss of daily work structure during outbreaks. Rutter et al. (2021) discovered that ambiguous communication causes stress to staff as measures/guidelines changed quickly and caused confusion. Rutter et al. (2021) emphasized the importance of short informal evaluation methods, the importance of leadership support and team support, as well as having staff wanting to be part of the decision-making process. This finding aligns with the study's participants' remarks as the teams and key roles identified above are a conduit for staff engagement.

Finally, Martinez-Paya et al. (2022) recommended focusing on human needs and staff well-being. The authors also suggested incorporating additional reinforcement personnel into the LTC home for crisis management situations. This advice aligns with the advisory bodies and authorities described by participants who provide additional bench strength to the affected organization.

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### ***Literature Review Comments on Competency Development in the LTC Home***

Examining the literature on competency development in LTC homes showed the following findings. Porritt et al (2023) described the use of evidence-based audit and feedback, identification of the context in which evidence is being implemented, the facilitation of any change, and an evaluation process as important in LTC home competency development. Handor et al. (2022) work informed of competency development through conducting audits and supplying feedback as ways to encourage persistence and attentiveness to what requires refinement. This approach enabled team members the ability to fulfill a learning task and grow into their roles. Gifford et al. (2013) proposed nurse-based competency elements as building a knowledge base, negotiation and dialogue, self-reliance, and persistence.

Dwyer (2011) spoke of the need for a supportive environment and a positive attitude to aged care as key to competency development initiatives. Finally, Rycroft-Malone et al. (2016) described that successful planning of staff development should pay attention to the personal factors about personal support work, such as acknowledging the existing skills and experience, as well as specific workforce development needs. Rycroft-Malone et al. (2016) highlighted paying attention to the individual, tapping into support workers' motivation, and using codesign as competency development strategies.

### ***The literature's perspective on compliance efforts in LTC homes***

The literature on systemic compliance in LTC provided some advice on this theme. In a U.S study, Schumaker (2025) wrote of penalties as effective at deterring practice violations but

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found other types of non-monetary actions had limited effects. McCauley et al (2021) associated practice compliance with the organization of resources, the workplace environment, interprofessional relationships, and the nursing care context. McCauley et al. (2021) also wrote of individual nurse factors such as the need for continuous education about infection control guidelines, precautions followed with more knowledge, a senior position influencing others, as well as a relationship with time, resources, and skill mix impacting practice compliance. Au et al. (2021) wrote that continued monitoring and training are needed for PSW populations to enhance compliance.

Beck et al. (2009) observed that appropriate staffing, with staff busy-ness mitigation, was important in reducing infections as workers had more time to prioritize good practices. Finally, Gopal-Rao et al. (2009) described the importance of an infection control program as highly effective in reducing infection because of greater awareness of the regulatory importance and hence greater personal compliance.

Therefore, systematic compliance efforts help to reinforce personal compliance and promote greater infection prevention capacity. Through appropriate resources, awareness, assessment, feedback, cultural inertial, and education, practice sustainability can be enabled.

### ***The Literature's Perspective on Methodological, Purpose-Driven Dissemination in LTC Homes***

A review of the literature on methodological dissemination in LTC homes provided interesting insights. Duan et al. (2024) work described pathways that led to a high conceptual use of best practices at the nursing unit level. The pathways include very high-level leadership

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involvement, a frequent use of educational materials, the need for very high social capital, and frequent communication between care aids and clinical educators. These findings aligned with Lourdia et al (2017) scoping review, where a finding of systematic leadership and management support is reported to promote implementation.

Levy et al. (2022) found that to be effective, an implementation process must be grounded in the perspective of the people who will be ultimately responsible for implementing. Educational messaging must speak to the long-term care staff and others who have a stake in the outcomes. Further, Levy et al. (2022) spoke of a need for onsite adaptation, for non-core elements, while core elements require systematic efforts to standardize.

Palmer et al (2019) research identified that a critical lesson for the implementation of randomized control trials in nursing homes is the practice of reciprocal facilitation. This practice included early and ongoing engagement in research design. Further, the researcher and organizational leadership's ongoing support, with an ongoing determination of the state of readiness of the organization, assisted in enabling quick, facilitated remediation.

### ***The literature's perspective on contingency development in LTC homes***

The literature provided some aligned observations with the concept of planning for contingencies in LTC homes. Fell's (2008) research found confusion about who was responsible for contingency planning in LTC. According to Fell (2008), local leadership and responsibility for coordinating planning for a response were seen as crucial. Mody and Cinti (2017), as a contingency thinking opportunity, identified in their research nursing home elements of a

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pandemic preparedness plan with a focus on surveillance, procedures in place for lab surveillance, reporting mechanisms, monitoring employee absences, tracking transfers, isolation, and how to limit access. Further, to support contingency planning in LTC homes, McDermott et al. (2021) discerned the importance of the development of education online, as well as virtual and simulation pedagogy.

Therefore, planning for contingencies such as layout and building deficiencies, resource deficiencies, patient dynamics, and treatment philosophy are all factors that need to be considered and proactively mitigated through preparation. The chances of any of the above issues being present may have an impact on the eventual patient outcomes. Considering these and other confounding factors is logical in a complex environment such as LTC homes.

### ***The literature's perspective on the concept of reflection and reinforcing in LTC homes***

Smith et al. (2013) observed in their work that few nursing homes used tools such as flow charts, PDCA cycles, or run charts. Generally, a gap in the knowledge of quality improvement tools provided in limited successful work execution. However, Kay et al. (2022) identified observations of improved collaboration between nurses and providers after using quality improvement tools such as SBAR interventions.

Mariani et al. (2017) observed that technology implementation, audit, feedback, and supervision lead to a more standardized care documentation process that primarily focuses on quality.

Taylor et al. (2007), in their work on nursing home falls prevention, developed an improved approach to fall assessments through standardized forms to evaluate risk, focus on

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communication tools, and methods such as tracking records to foster open investigation in a culture of safety.

Martinez-Paya et al. (2022) identified best practices in nursing home operational processes, including staff reinforcement. Martinez-Paya et al. (2022) also identified it as crucial to retrospectively analyze and reflect on what worked and what did not work, and identify practices to stay.

Finally, Pimental et al. (2020) observed that training is optimal in increments over a longer period to avoid overwhelming participants. Once begun, strategies had to be more systematized with easy-to-understand data reporting and communication scripts, to make huddles more meaningful and likely to occur (Pimental et al., 2020).

### ***Literature Review Comments on Alerting Worker Attention in LTC Homes.***

The literature provided a more generalized lens than my findings on the LTC home mechanisms used to gain workers' attention for a desired behaviour. Thompson et al. (2021) observed that the chain of command influences attention to communication and exerts an influence on collaboration. To gain worker attention, Thompson et al. (2021) described the need for the respect garnered by influential stakeholders assisting others. Savandranayagon et al. (2021) shared the prudent need for LTC homes to recognize and support PSWs in their ability to provide patient-centred care to residents with dementia. PSW attention was enabled through mechanisms such as peer-to-peer knowledge sharing. Stolee et al. (2005) observed the need for ongoing expert support as a method to enhance frontline workers' focus.

Iida et al. (2020) found that effective educational intervention for LTC staff needs to include more consideration of context, organizational culture, and user involvement to enhance

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the quality of care. Iida et al. (2020) also promoted the importance of experiential learning references. Finally, Wen et al. (2012) observed that front-line staff who attended in-service sessions on core palliative care topics significantly increased the self-reported application of palliative skills.

In summary, the literature identified the use of the chain of command, peer-to-peer knowledge exchange, and experiential learning as efficacious strategies. Together, the literature and my research findings, as concepts, promote, advance and accelerate workers' behaviour through tactical connection and attention.

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## Appendix I - Responses to Interview Questions

### ***Research Question One – From your perspective and experience, how does the organization advance the introduction of new infection prevention guidelines to your unit’s workforce?***

For this research question, with an attention to change strategies, participants' responses detailed patterns of a structured and methodological dissemination that included activities such as receiving guidelines from Public Health Ontario, filtering the guidelines through a leadership group, involving front-line staff in the gap analysis assessment, creating formalized training sessions, and then creating an action plan and work plan for executing the change.

Participants also advanced guidelines through the use of diverse communication tactics, including verbal announcements, email announcements, team huddles, one-to-one communications, communication memos, posted fact sheets, visual aids, and, lastly, back door of the toilet stall signs.

Participants described purpose-driven meetings, linked to infection prevention dissemination, involving staff in team huddles, identifying a key item on a regular meeting agenda, and the practice of regular, timed communication to establish an expectation of information for the workers to anticipate.

Focused roles and responsibilities, dedicated to infection prevention information delivery, involved the infection control nurse, the infection control team, the infection prevention champions, and the environmental staff, who were affirmed as a mechanism to advance new information.

Focused infection prevention instruction, as a mechanism of knowledge advancement, was observed to involve online training, scenario-based demonstrations, dedicated infection

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control communications, one-on-one education, follow-up on expectations and Plan-Do-Check-Act cycles.

In summary, the responses to the research question detailed a structured methodological dissemination process, diverse communication tactics, purpose-driven meetings, focused roles and responsibilities, and focused instructions as responses to how LTC homes disseminate infection prevention guidelines to their front-line staff.

***Research Question Two – From your perspective as a leader, can you tell me what approaches work well when implementing infection prevention best practices to your unit's workforce?***

In response to this research question, with an attention to change strategies, several approaches were outlined. Participants observed the approach of a focus on leadership engagement that involved reinforcing information, being visible as a leader, leading by example, undertaking ad hoc engagement, establishing open communication and transparency, utilizing peer champions, and undertaking resident engagement. Another approach, focused meetings, involved team huddles, neighbourhood meetings, education-focused meetings, and teamwork-focused meetings.

Participant responses also highlighted approaches for focused knowledge and skills development, which involved online modules, hands-on training, demonstrations, linking knowledge directly to the task at hand, utilizing e-mail tips and tricks, and a focus on adult learning considerations.

Finally, the responses to the research question identified approaches involving review, analysis and reflection. A special emphasis by participants was noted on reflection activities centred on public health recommendations, audits, going out and seeing if it is working in the

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workforce, as well as positive feedback and acknowledgement of activities that met the new standard of practice that was expected. In summary, the study question found the approaches that worked well when implementing best practices in infection prevention were leadership engagement, focused meetings, focused knowledge and skill development, as well as review, analysis and reflection.

***Research Question Three – Can you tell me how you ensure that your staff continue to maintain the infection practices that were introduced to them?***

Reflecting on the observations for this research question, a question designed to elicit approaches to sustainment and standardization, participants provided the following aggregated insights. Participants ensured staff had maintained infection best practices through enabling tools such as checklists and audit tools, evaluations, signs, risk assessment tools, and the use of Public Health Ontario assessment tools.

Participants also described leadership engagement, which involved leadership monitoring, team lead monitoring, walk-through or walking rounds, and working side-by-side with staff as tactics to ensure best practices were maintained. Practices were maintained through activities such as education for knowledge and skill development, which involved training sets, teachable moments, e-learning, personal mandatory one-day training, revisiting practice after a short interval, instruction videos, YouTube resources, and educational meetings.

Finally, sustaining infection prevention practices was generated by developing a culture that involved symbols like infection prevention carts, consistently bringing forward goals, addressing infection prevention topics, using information on lanyards, and generating messages on bulletin boards. In summary, to maintain infection prevention practices introduced to the

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workforce, leaders relied on enabling tools, leadership engagement, education, and developing an enabling culture as key insights for this research question.

### ***Research Question Four – Can you describe how ongoing compliance with infection prevention is evaluated by the organization?***

Observations for Research Question Four, with an intention of seeking approaches to sustainability and standardization of best practices, created insights as to how the organization evaluated ongoing compliance with infection prevention guidelines. One such mechanism was through the concept of review, analysis, and reflection. Here, the organizations used audit and incident tracking, set requirements for organization-wide auditing, the use of surveillance tools, leadership reviews, survey and feedback forms, as well as documentation and policy review.

Advisory bodies were also utilized for evaluating ongoing compliance, which involved IPAC team meetings, community partner liaison, and routine quality monitoring. Finally, efforts were made to reinforce personal compliance and capability through walk-throughs, reviewing monthly training videos, audits, creating an ongoing awareness of expectations, undertaking risk assessments, daily communications, and utilizing public health unit inspections.

In summary, organizations evaluated ongoing compliance through review, analysis, and reflection, through advisory bodies, and through reinforcing personal compliance and capability.

### ***Research Question Five – Can you describe any tools or mechanisms that you find work well when introducing infection prevention best practices?***

The responses to Research Question Five addressed the tools or mechanisms that were found to assist in transferring best practices into front-line worker practices. The responses from participants included concepts such as cognitive aids, which included signage, quick reference

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cards, electronic learning modules, and risk indicator sheets, all of which provided insights into assisting recall.

Purpose-driven sessions were identified, such as monthly meetings, process improvement meetings, or outbreak talks, which helped to drive best practices into workers' consciousness. Purposeful communication was detailed by participants, such as emails or newsletters, fun communications, or dynamic documentation, all of which helped transfer best practices into front-line practices.

Finally, focused instructions were delineated, such as specific demonstrations, public health unit resources, peer monitoring, teach-back, and quizzes assisted as mechanisms for knowledge transfer. In summary, tools or mechanisms that worked well when introducing infection prevention best practices included cognitive aids, purpose-driven sessions, purposeful communications and focused instruction.

### ***Research Question Six – From your perspective, are there any operational barriers that inhibit the transfer of best practices?***

Research Question Six asked participants for responses regarding operational barriers that prevented the transfer of best practices in infection prevention. Participants depicted physical plant layout deficiencies, such as poor physical barriers, poor air quality, storage, and poor staff separation opportunities as insights into design issues that have an impact on infection prevention experiences. Participants also spoke of resource deficiencies, such as lack of equipment, lack of key positions, limited time, an excessive span of control, and rural isolation as risks to effective infection prevention practices.

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Participants recounted resident dynamics and the LTC home philosophy as headwinds to the transfer of practices, including the impact of resident behaviours as being complex, issues with cohorting and staffing complex residents, as well as ensuring the LTC home has the philosophy and aesthetics of a home rather than an institution.

Low staff compliance with infection prevention evidence was observed in comments regarding compliance slips (too lax), working opposite shifts, staff resistance to change, staff turnover, staff confidence issues, low staff levels of baseline knowledge, access difficulty with non-centralized information, and the impact of outside professionals all provided a layer of obstacle to the consistent execution of infection prevention best practices.

In summary, barriers to infection prevention that inhibited best practices transfer were physical plant layout, resource deficiencies, resident dynamics and the LTC home philosophy, and staff compliance with infection prevention.

### ***Research Question Seven – Anything you would like to add or is missing from this discussion?***

Research Question Seven gave participants a final opportunity to add their advice and experience to the study. Though a wide variety of information was provided in this generalized question, the following themes emerged from the discussions.

First, responses coalesced around concepts of staff compliance with an infection prevention focus including identified issues such as the attitudes of staff as barriers, knowledge deficits of families and visitors, low baseline knowledge of staff, the importance of giving rationale for compliance, creating a culture of openness and safety to facilitate staff compliance, and staying in tune with the context of the long term care home as major factors influencing infection prevention implementation.

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Generalizations by participants regarding the need for evaluation and reflection, especially, taking and dedicating time for reflection, auditing to catalyze behaviour change, and creating the discipline of following up on an initiative, as enablers to practice changes. Further, for this question, participants recounted the need for leadership effectiveness through traits such as showing support, modifying behaviours, and continually curating messaging for staff as key considerations for practice implementation.

Finally, responses to this question generalized on themes such as entities and/or team members with a focus on infection prevention practices that were observed through the importance of infection control nurses, the use of RNAO liaisons, infection control committees, and third-party inspectors as enabling infection prevention practices. In summary, this broad question to participants highlighted staff compliance with an infection prevention focus, evaluation and reflection, leadership effectiveness, and the use of infection prevention entities and team members as factors important for considerations to infection prevention practices improvement.

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## Appendix J - Thematic Analysis Summaries

The following section summarizes the eight major themes that were derived from the interview process as well as the recommendations implicit in the theme. The themes represent the product of the seven interview questions that were responded to by the twenty participants, as well as the rigorous coding, classification, and consolidation process that I undertook to create the themes.

### ***Theme – Dissemination Methods.***

I defined ‘Dissemination Methods of Activities’ as a structured spread of evidence through analysis, action planning, policy adjustment, and meeting approaches. As LTC homes organize practice changes, it is implied through the lens of this theme that a structured plan and process should be adopted to enhance infection prevention outcomes.

***Recommendation from Theme.*** This theme suggests the need for the creation of a dynamic architecture as a critical factor to propagate best practices across all of the functions of a LTC home and its frontline workforce. Having a resilient and adaptive structure for information exchange appears implicit in effective dissemination within a complex and dynamic healthcare context, such as LTC homes.

### ***Theme – Functional Roles and Supporting Entities.***

I defined ‘Functional Roles and Supporting Entities’ as a focused entity or group tasked with addressing and advising a specific problem, issue, or practice gap in the LTC home work environment. This theme implies that roles such as the IPAC lead, local champions, and entities such as the IPAC committee play a critical role in driving infection prevention integration.

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***Recommendation from Theme.*** This theme, as a critical factor, suggests that creating focused, accountable roles and problem-focused groups enables and reinforces conscious attention to best practice delivery in a local context. Benefiting from accessible expertise and experience is key for a work environment constantly challenged with uncertainty and external infection threats.

### ***Theme – Alerting Worker Awareness.***

I defined ‘Alerting Worker Awareness’ as the mechanisms for the advancement of the front-line workers’ attention or mindfulness in choosing desired behaviours at a critical moment in the care process. It is implied that diverse communications, cognitive aids, and purposeful, yet fun media, are among the strategies that capture, immerse, and accelerate workers’ attention toward desired behaviours.

***Recommendation from Theme.*** It is recommended, as a critical factor, that creating an adaptiveness in the use of available mechanisms for attracting workers’ attention to the execution of best practices helps shape the compliance required to achieve the best possible infection prevention outcomes for LTC home populations. Overload, distractions, and constant change are barriers to the effective execution of best practices. Centring workers on the key messages and desired behaviours through novel approaches appears vital to infection prevention propagation.

### ***Theme – Developing Competencies.***

I defined ‘Developing Competencies’ as a conscious activity by LTC homes to generate effective practices, skills, and routines in their workforce’s experience to appropriately respond to an infection prevention challenge. The theme implies that a focus on knowledge and skills

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development, through tactics designed to transfer best practice knowledge to the behaviour of front-line workers, is an important priority.

***Recommendation from Theme.*** It is recommended, as a critical factor, that careful attention is required on the context, knowledge, and reinforcement mechanisms that facilitate the development of an enabling skillset in front-line workers. The competency strategies may need to evolve as the practice context changes.

### ***Theme – Achieving Compliance.***

I defined ‘Achieving Compliance’ as the structural or framework-oriented system that LTC homes have advanced to implement, compel, and ensure the sustainability of new, effective practices. The theme implies that systematic compliance efforts help to reinforce personal compliance and promote greater infection prevention capability.

***Recommendation from Theme.*** It is recommended, as a critical factor, that attention to systematic compliance efforts provide inherent diligence and a measure of perseverance to sustain desired best practices in front-line workers. Practice compliance can slip over time with deadly consequences.

### ***Theme – Leadership Activation Drivers.***

I defined “Leadership Activation Drivers” as a purposeful engagement and a deliberate mechanism to enable the effectiveness of employees in consistently and reliably delivering best practices. The theme implies the critical importance of leadership for developing approaches for results as well as the importance of leadership in shaping the individual behaviours of frontline workers.

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***Recommendation from Theme.*** It is suggested, as a critical factor, that leadership, from a results orientation and from a coaching perspective, is the glue and the consciousness that makes desired change happen. Attention by LTC homes to advancing leadership competencies, experiences, and engagement to facilitate implementation appears critical.

### ***Theme – Reflection and Reinforcement.***

The theme “Reflection and Reinforcement” is defined as a mental model centred on the execution, review, sustainability, and ongoing advancement of a cadre of critical actions or task-based elements linked to a tangible objective. The theme implies that the review, analysis and reflection, as well as a commitment to evaluation, enable a LTC organization to prepare for variation in an implementation process, enable learning from an experience, and the confidence to make effective mitigations.

***Recommendation from Theme.*** It is recommended, as a critical factor, that LTC homes commit to an infection prevention planning and implementation process that is augmented by a review process followed by a recalibration of tactics and strategies.

### ***Theme – Contingency Development Activities.***

I defined the theme ‘Contingency Development Activities’ as a systematic planning approach to addressing risks that first identifies the risks and then requires the relentless pursuit of mitigations or proactive activities. The theme implies that planning for contingencies or risks needs to be considered and proactively mitigated through preparation for an outbreak event.

***Recommendation from Theme.*** It is recommended, as a critical factor, that contingency development is a distinguishable activity for complex environments such as LTC homes to prioritize in their approaches to best practice integration. LTC homes are risky environments,

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and due diligence to mitigate risk can save unnecessary comorbidity and possibly unnecessary deaths.

## **Appendix K – Additional Insights into Implementation Science Approaches**

The following overview provides the reader with a brief narrative of key concepts in the practice of implementation science.

### **How is Implementation Science Described?**

Implementation science is described in several ways. Handley et al. (2015) described implementation science as “a systems study of how to design and evaluate a set of activities to facilitate successful uptake of an evidence-based health intervention” (p. 660). Murphy et al. (2012) portrayed implementation science as “the scientific study of methods to promote the systematic uptake of clinical research findings (and other evidence-based practices) into routine practice and to improve the quality (effectiveness, reliability, safety, appropriateness, equity, efficiency) of health care” (p. 302) while Saint et al. (2010) depicted that “healthcare settings are unpredictable and nonlinear”; hence, “implementation science is a clinical and social discipline that use both technical components and adaptive capacities to better understand context” (p. S16).

Implementation science is also characterized as the science of placing knowledge of evidence into action and of understanding what, why, and how evidence-based practices work in the real world (Neta et al., 2018). According to Neta et al., (2018), implementation science is described tactically as “building stakeholder buy-in (planning), train practitioners to deliver an intervention (educating), modify incentives (financing), revise professional roles (restructuring), conduct audit and feedback (managing quality), and create credentialing or licensure standards (policy context)” (p. 903). Implementation science strives to understand how strategies work to enhance implementation and understand the mechanism behind the tactics (Neta et al., 2018). Bauer and Kirchner (2020) build on Neta et al. (2018) tactical characterizations by expressing

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implementation science as an approach to identify factors affecting the uptake of innovation into routine use by engaging within the context in which the innovation is introduced. Bauer and Kirchner (2020) wrote “the clinical research establishes the efficacy and then effectiveness of an innovation, and then hands it off to the implementation scientist to test ways of getting people to use it” (p. 4).

To summarize, implementation science is described in the literature as a systemic and largely qualitative approach to tactically design, facilitate, evaluate, and adapt evidence-based practice into a quality-driven healthcare context. Hence, implementation science appears as a deliberate procedural mindset to facilitate a change management process.

### **How is Implementation Science Used in Planned Change?**

Implementation science assists planned change in three major ways. First, implementation science facilitates knowledge transition and the synthesis of new knowledge into practice (Strauss et al., 2009). Second, according to Handley et al. (2015), implementation science seeks to identify target factors (crucial barriers or enablers) important for successful implementation and uses this information to develop and test strategies to improve the effectiveness of an intervention’s uptake. Third, implementation science approaches focus on “how do we get evidence to drive practice and get evidence-based intervention to become standard care so that everyone who can benefit from them has access” (Neta et al., 2018, p. 900). In essence, implementation science is used to shape best practice evidence into planned activities through leveraging an understanding of context as well as the drivers for the effective integration of desired behaviour. Through this synthesis of knowledge and action, better health outcomes are achievable.

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The literature provides several frameworks for advancing the implementation science planning approaches. Darmaschroder et al. (2009) and Jones-Schenk and Bleich (2019) identified the *Consolidated Framework for Implementation Research* (CFIR) as a programmatic structure and social process created to advance implementation science initiatives within an organization. As stated in the previous section, a key consideration for the advancement of an initiative is its context. Context is described by Darmaschroder et al. (2009) as a set of circumstances or unique factors encompassing an implementation effort. According to Darmaschroder et al. (2009), five domains comprise the CFIR framework and simultaneously elaborate on an initiative's context: the intervention's characteristics, the outer or external setting, the inner setting or structure of the organization, the characteristics of individuals, and the process (or the planning, engaging, execution, reflection, and evaluation of the intended change).

Powell et al. (2017) build on Darmaschroder et al. (2009) by examining the selection and tailoring of an actual implementation strategy. According to Powell et al. (2017), the first step to selecting and tailoring implementation science strategies is to assess the factors that influence implementation processes and implementation outcomes such as the characteristics of the innovation, the setting for implementation, the stakeholders, and other potential barriers or potential facilitators to implementation. The second step is the selection and tailoring of strategies that address context-specific factors identified in the first step or the pre-implementation assessment (Powell et al., 2017). Strategies to counter context-specific factors include the use of concept maps, group model building, conjoint analysis, and intervention mapping (Powell et al., 2015). According to Powell et al. (2017), the above methods galvanize stakeholder goals and create consensus; create systematic, transparent, and replicable processes; and respond to the complexity of implementation efforts.

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In a separate research initiative, Powell et al. (2015) provided a list of seventy-three potential implementation science interventions that can be considered for an improvement initiative.

Examples of the implementation strategies included conducting education outreach sessions, developing a formal implementation blueprint, and obtaining formal commitment. These elements can serve as building blocks or a framework for constructing multifaceted, multilevel initiatives for implementation efforts (Powell et al., 2015). Like Powell et al. (2015), Chu and Weiser (2021) identified categories to help focus implementation science strategies. According to Chu and Weiser (2021), five categories act as a framework to shape implementation science initiatives: 1) the specifics of the intervention; 2) material, intellectual, and administrative support for implementation; 3) the knowledge and behaviours required to enact change; 4) the measurement, oversight, and feedback mechanisms to identify progress; and 5) how interventions are systematized.

Continuing the discussion of frameworks, Seers et al. (2018) used a *Promoting Action on Research Implementation in Health Services* (PARIHS) framework that examined three factors that influence the uptake of research evidence into practice: the nature (strength) of the evidence, the context in which it is used, and the extent of facilitation (or help) that people utilized. Of note, the authors observed that facilitation improved clinical practice guidelines uptake by nearly three times and that the four ingredients required to effect change were urgency, solidarity, intensity, and accumulation (Seers et al., 2018). The work concluded successful implementation is "a function of the nature of the evidence being implemented, the context into which it is implemented and appropriate facilitation to help people implement the evidence" (Seers et al., 2018, p. 9).

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As a conclusion for this section, Straus et al., (2009) and Graham et al. (2006) defined knowledge translation as an “iterative process that includes the synthesis, dissemination, exchange, and ethically sound application of knowledge to improve health, provide more effective health services and products, and strengthen the health care systems” (p. 165). Straus et al. (2009) and Graham et al. (2006) developed a *Knowledge to Action Framework* and an *Action Steps Cycle* that support implementation science initiatives. The authors claimed knowledge creation is composed of a three-phased knowledge action framework: knowledge inquiry, synthesis of knowledge, and the creation of knowledge tools. According to the authors, knowledge becomes more useful to end users as it is *distilled* through the unique phases of the knowledge to action framework. In the action steps cycle that supports the implementation science initiative the process included: identifying the problem; identifying, reviewing, and selecting the knowledge to implement; adapting or customizing the knowledge to the local context; assessing the determinants of knowledge use; selecting, tailoring, implementing, and monitoring interventions related to knowledge translation; and evaluating outcomes or impacts of using the knowledge and determining strategies for ensuring sustained knowledge (Straus et al., 2009 & Graham et al. (2006) ). Straus et al., (2009) and Graham et al. (2006) frameworks appear as a central factor in the mechanisms for generating the promising effects of implementation science.

### **Implementation Science advancement in health care contexts**

The literature provides several illustrations of implementation science advancements within healthcare-related settings. Check et al. (2020) examined implementation science within the context of cancer care. In the cancer care setting, implementation science efforts “promote the systemic uptake of evidence-based interventions into practice and policy” and “focuses on

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the need to change behaviour across multiple levels of influence to adopt and sustain new evidence in practice" (p. 187). Check et al. (2020) described implementation science as an approach that is scientific, and research oriented. The work concluded that implementation science initiatives target generalizable mechanisms of change initiatives in cancer treatment.

Yapa and Barnighausen (2018) examined implementation science healthcare initiatives in resource-poor countries and communities. In their experience, implementation science approaches contributed to a science of discovery, design, and the evaluation of novel approaches to evidence-based healthcare practice delivery. Yapa and Barnighausen (2018) discerned that implementation science utilized in resource-poor settings focused on resource innovation as the primary research object. Implementation science was found to enable testing of approaches to expand human resources for health through tele-education, telemedicine, task-shifting to lower-skilled health workers, task-shifting to clients, new care models, technological innovation and increasing laboratory capacity (Yapa & Barnighausen, 2018). Of interest, implementation science created reverse innovation that later emerged as efficiency tactics in resource-rich settings (Yapa & Barnighausen, 2018).

Galaviz et al., (2020) generated observations for implementation science use in addressing population health disparities. Galaviz et al., (2020) observed implementation science helped understand and address the racial and ethnic disparities exposed during the COVID -19 pandemic through the examination of historical context, values, culture, and the needs of minority populations. Further, implementation science approaches helped identify drivers of health behaviour and informed the design of interventions (Galaviz et al., 2020). Galaviz et al., (2020) noted, through implementation science approaches, that it was critical to assess if

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interventions worked in targeted populations and then to continuously assess interventions as COVID-19 evolved.

Finally, from a professional entity's perspective, Masso et al., (2017) investigated the role of nurse practitioners and implementation science. Using implementation science approaches, the author's work recommended the use of checklist strategies to enhance the implementation of nurse practitioner care models. According to Masso et al. (2017), implementation science approaches enabled role comparisons and increased the capability to make informed decisions about the wider implementation of nurse practitioner interventions.

### **Implementation Science in Evaluative Research and Assessment**

The literature suggests implementation science has a significant role in evaluative research and assessment for effectiveness. Examining implementation science as a quality improvement process, and an evaluation of effectiveness for providers and organizations, the Agency for Healthcare Related Research and Quality (AHRQ) (2016) wrote of the following four steps to translating evidence into practice: 1) know the evidence-based practices and translate them into checklists or other tools, 2) identify local barriers to implementation and develop strategies to overcome resistance, 3) measure performance to ensure adherence to evidence-based practices, and 4) continue to ensure that all residents get the evidence-based practice (p. 5). According to the AHRQ (2016), developing an improvement initiative based on these four steps provided a common platform and research baseline to implement, reflect, understand, and spread infection prevention strategies in local and provincial environments. As an additional perspective to AHRQ (2016), Jones-Schenk and Bleich (2019) observed implementation science research as an understanding of the science of making nonoptional things happen. According to Jones-Schenk and Bleich (2019), implementation research is

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informed by the intervention characteristics, outer factors (such as resident expectations and incentives), inner setting or structural characteristics, the characteristics of the individuals involved, and the process of implementation (such as how an initiative is planned and executed). Accordingly, reflexive monitoring and evaluation are key activities grounded in implementation research and quality improvement.

In addition, implementation science is a key enabler of assessment. Neta et al. (2018) attribute implementation science as active strategies or methods to ensure that evidence is “effectively understood, adopted, implemented and maintained in practice settings” (p. 899). Neta et al. (2018) observed that implementation science approaches feature specific measurement indices relating to awareness, acceptability, reach, adoption, appropriateness, feasibility, fidelity, cost, and sustainability dimensions. Further, as an assessment approach, implementation science is distinct in its ability to “drive adoption, implementation, and sustainability, ultimately leading to sustained practice change” (Neta et al., 2018, p. 903). Chen et. al. (2021) builds on Neta et al. (2018) work by informing readers that implementation science is comprised of stakeholder engagement, clinical reminders, and conducting local needs assessments (such as acceptability, adoption, appropriateness, costs, feasibility, fidelity, penetration, and sustainability assessments). Accordingly, key facets of implementation science include documentation, iterative evaluation, and cyclical experiments (Chen et al., 2021). Correspondingly, as a framework for examining implementation science results, Proctor et al. (2011) proposed a taxonomy of eight distinct implementation outcomes to guide the assessment of an initiative. These implementation outcomes include acceptability, adaption, appropriateness, cost, feasibility, fidelity, penetration, and sustainability (Proctor et al., 2011). In closing, the elements observed above contribute to the assessment, evaluation, and reflexivity required for

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ensuring the effective adoption and enhancement of best practices. As with any investment of time, energy, and resources, it is critical to ensure that an initiative is creating value throughout the implementation process.

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## Appendix L – Aggregated Themes, Code Clusters and References

### Conceptual Dimension – Leadership Qualities and Frameworks

#### *Theme – Leadership Drivers*

**Table 27**

Sub Theme	Dominant Codes	Sample Reference Codes
Leadership Engagement	Reinforcing with Staff	<ul style="list-style-type: none"> <li>• Reinforce key messages during meetings</li> <li>• Remind in an approachable and non-confrontational way – build culture</li> <li>• Hear it in multiple ways</li> <li>• PSW supervisor that also provides support</li> <li>• Ask how we are going to correct that</li> <li>• Short things that continually reinforce (toilet talks)</li> </ul>
	Visible as Leader	<ul style="list-style-type: none"> <li>• Must be visible on the unit</li> <li>• Make the connection with the frontline</li> <li>• Go out and be involved in the change</li> <li>• Attend and be aware of challenges</li> <li>• Be there to know they are supported</li> <li>• Need to be used to seeing you</li> <li>• Gentle persuasion – not disciplinary</li> <li>• Need to invest time because staffing so thin and for the team sort of atmosphere</li> <li>• Lead by example in the moment</li> </ul>
	Ad hoc engagement	<ul style="list-style-type: none"> <li>• Ad hoc team huddle</li> <li>• In-service in person</li> <li>• Reach more people to identify the gaps</li> <li>• Just a reminder, this is what we need to do</li> <li>• Talk about resistance to change</li> </ul>
	Open Communication and Transparency	<ul style="list-style-type: none"> <li>• For implementation or correcting practice behaviour that doesn't align with best practices</li> <li>• Things don't always work as you envision them working – understand limitations in rural communities</li> </ul>
	Peer champion	<ul style="list-style-type: none"> <li>• To model best practices</li> <li>• Train other people to do it as well</li> <li>• Familiarity with the unit – assign from the unit</li> </ul>
	Engage Residents	<ul style="list-style-type: none"> <li>• High-functioning resident who can help</li> <li>• The resident reinforces the staff</li> <li>• Helps residents' self-worth</li> <li>• Some residents have been nurses or doctors ...know about these things</li> </ul>
	Leadership Monitoring	<ul style="list-style-type: none"> <li>• Audit and immediately follow up on findings – bring back to regular team meeting and communicate through e-mail (depending on what findings are)</li> </ul>
	Team leads that monitor	<ul style="list-style-type: none"> <li>• Team leads in the neighbourhood that monitor day-to-day tasks</li> <li>• Report on not doing something correctly and correcting in the moment</li> <li>• If they see leader, everyone is more focused</li> <li>• Peer-to-peer reinforcement</li> </ul>

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### Quotes:

"I just go down and say, how is your day going and, you know, chat about any challenge. And then I observe what they are doing." (Participant 12).

"It helps to talk about resistance. If they have resistance to the challenge, you know it's not just like all behind the scenes." (Participant 14).

Note. The above synthesized references were generated from participants 1,2,4,5,6,7,8,9,10,11,12,13,14,15,16,17 & 19 (Source NVivo 15)

**Table 28**

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<b>Sub Theme</b>	<b>Dominant Codes</b>	<b>Sample Reference Codes</b>
Staff Compliance and IP Focus	Compliance Slip	<ul style="list-style-type: none"> <li>• Too comfortable, things slip up, need constant training and reminders</li> <li>• Forget or do not understand</li> <li>• Improper aseptic techniques</li> <li>• Complacent because tired</li> </ul>
	Staff busy	<ul style="list-style-type: none"> <li>• Straight nights – don't see them</li> <li>• Night shift to do some teaching and auditing – impossible without their help</li> <li>• Post minutes for nights</li> <li>• Miss out on a lot when only doing nights</li> </ul>
	Staff resistant to change	<ul style="list-style-type: none"> <li>• Because of short staffing</li> <li>• Bad relationship with management</li> <li>• Change fatigue – overwhelmed</li> </ul>
	Staff sick	<ul style="list-style-type: none"> <li>• Staff coming in sick for financial reasons</li> </ul>
	Staff turnover	<ul style="list-style-type: none"> <li>• Brand new grads</li> <li>• Get basics but lack in compliance</li> <li>• Task-driven</li> </ul>
	Confidence Slip	<ul style="list-style-type: none"> <li>• A little more hesitant – have to give them confidence at the start</li> <li>• Support them when they are there</li> <li>• Someone on call to support</li> </ul>
	Levels of educational experience	<ul style="list-style-type: none"> <li>• Knowledge gap from different levels of education</li> <li>• Different programs, different experiences</li> </ul>
	Not clearly communicated	<ul style="list-style-type: none"> <li>• Not checking email, return vacation, missed signage</li> </ul>
	Importance	<ul style="list-style-type: none"> <li>• Think it is not important</li> </ul>
	Outside profession	<ul style="list-style-type: none"> <li>• Maintenance staff, dietary staff who do not have experience in LTC</li> </ul>
	Attitudes	<ul style="list-style-type: none"> <li>• Receiving feedback not well</li> <li>• Not qualified</li> <li>• Struggle to get people to take flu shot, religious reasons</li> <li>• Lax because people are not dying anymore</li> <li>• Misinformation with families</li> <li>• Families want different things</li> <li>• Pushback</li> </ul>
	Education to Families and Visitors	<ul style="list-style-type: none"> <li>• Family fatigue for masks and sanitizers</li> <li>• Lots of people are coming into the home</li> <li>• Educate family about vaccines, etc</li> <li>• Take resident out – not PPE in community</li> </ul>
	Baseline knowledge of staff	<ul style="list-style-type: none"> <li>• Don't have training like nursing staff or rationale behind it – PSW short course</li> <li>• Reading and writing may be a challenge</li> <li>• Rework the question as they may have difficulty interpreting</li> </ul>
	Need to give rationale	<ul style="list-style-type: none"> <li>• Staff need to understand LTC – highly regulated</li> <li>• This keeps you safe as well – hear more, they understand</li> <li>• Keeping importance without scaring people</li> <li>• Lots of education, follow up and lots of patience.</li> </ul>
	Constant learning process	<ul style="list-style-type: none"> <li>• Things change all the time</li> <li>• Getting down to chat with staff individually – why aren't you doing this? Why? What is the obstacle?</li> </ul>

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	Risk to staff	<ul style="list-style-type: none"> <li>• PSWs do the hardest work, are in for the longest duration, at the biggest risk ...so this requires their attention</li> </ul>
<p>Quotes:</p> <p>“We do education sessions with our families. Quarterly, we try to offer an IPAC session to tell people about vaccines, the health of, and for residents.” (Participant 7).</p> <p>“But now everyone is lax. Now everyone is getting more relaxed because it's not COVID. People aren't dying anymore.” (Participant 10)</p>		
<p>Note. The above table was synthesized from the responses of participants 1,3,6,7,8,9,10,13,15,17, &amp; 20 (Source NVivo 15)</p>		

**Table 29**

Sub Theme	Dominant Codes	Sample Reference Codes
Leadership Effectiveness	Show support	<ul style="list-style-type: none"> <li>• Know that you are there to support them</li> <li>• Not alone in this</li> <li>• Get suppliers in to educate – have everything they need and going to be safe</li> </ul>
	Model Great Behaviour	<ul style="list-style-type: none"> <li>• Model great behaviour of integrating infection prevention into daily workflow – significant differences</li> </ul>
	Curate messages	<ul style="list-style-type: none"> <li>• Overload</li> <li>• Curate messages</li> </ul>

Quote:

“Modelling the great behaviours of integration prevention into daily workflows, and I find that can make a significant difference.” (Participant 1)

Note. The above table was synthesized from the responses of participants 1,2,9,13,15,17,18, & 19 (Source NVivo 15)

### ***Theme – Functional Roles and Supporting Entities***

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**Table 30**

<b>Subtheme</b>	<b>Dominant Codes</b>	<b>Key Reference Codes</b>
Focused Accountable Roles and Responsibilities in Infection Prevention	IPAC Lead	<ul style="list-style-type: none"> <li>• Role receives info from public health guidelines and provides to staff and the leadership team</li> <li>• Most information, ideas and new practices through IPAC</li> <li>• Time in schedule to conduct walkthrough audits, review policies, learn about updates</li> <li>• Teaching by walking around</li> </ul>
	Infection control team (ICT)	<ul style="list-style-type: none"> <li>• Larger organizations have ICT</li> <li>• ICT meet regularly to analyze and compare to current policies and procedures</li> <li>• Determine what process to use to disseminate</li> <li>• Extra training – can go around and be champions to help correct bad practices</li> </ul>
	Champions	<ul style="list-style-type: none"> <li>• Steps in, in the absence of IPAC lead</li> <li>• Nighttime shift assistance</li> </ul>

Quote:

“I find it important creating a peer champion to model best practice.” (Participant 1)

Note: The above table was synthesized from the responses of participants 2,4,5,6,9,10,11,12,13, 15,19,&20 (Source NVivo 15)

**Table 31**

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Subtheme	Dominant Code	Sample Reference Codes
Purpose-driven meetings	Huddles	<ul style="list-style-type: none"> <li>• Very efficient way to get the message across – five minutes</li> <li>• Huddles once a week for everyone, not just front-line staff</li> <li>• Huddles to go over a skill like donning or doffing – let them know we are in an outbreak</li> </ul>
	Regular meetings	<ul style="list-style-type: none"> <li>• Bring to the meeting with MO and RPNs in the regular primary care meeting</li> <li>• Half an hour</li> <li>• Everyone a turn to speak</li> </ul>
	Geographic Oriented Neighbourhood meetings	<ul style="list-style-type: none"> <li>• Once a month</li> <li>• Whatever discipline is available</li> <li>• IPAC update on new information or communication</li> </ul>
	Team meetings	<ul style="list-style-type: none"> <li>• IPAC lead comes to teach every month</li> <li>• Provide reminders</li> </ul>
<p>Quote:</p> <p>“Huddles were always a very efficient way to get our message across to frontline staff because obviously they don’t have time to sit on like a Zoom call. They literally have five minutes.” (Participant 5)</p>		

Note. The above table was synthesized from the responses of participants 3,5,6,10,12,13,14,15,17, & 19 (Source NVivo 15)

**Table 32**

Subtheme	Dominant Codes	Sample Reference Codes
Advisory Bodies	IPAC lead meetings	<ul style="list-style-type: none"> <li>• IPAC meetings – review data and compliance</li> <li>• Quarterly IPAC team and quality meetings – see data, make changes and measure effectiveness</li> <li>• Bounce ideas, see trends, as others may have better outcomes</li> </ul>
	Routine Quality Meetings	<ul style="list-style-type: none"> <li>• Quality assurance, quality council meetings</li> <li>• Review data ...how many staff are educated in this initiative</li> </ul>
	IPAC report to Council	<ul style="list-style-type: none"> <li>• Every month report goes to the council and is discussed there</li> </ul>
<p>Quote:</p> <p>“Our IPAC and our quarterly meeting give us enough time to gather enough data to see and then make the changes and then trend to see if it is effective.” (Participant 10)</p>		

Note. The above table was synthesized from the responses of participants 7,9,10,13,14,15,16,17,18 & 19 (Source NVivo 15)

**Table 33**

## EMBEDDING AIRBORNE INFECTION PREVENTION BEST PRACTICES IN LONG-TERM CARE HOMES: AN IMPLEMENTATION BLUEPRINT

Sub Theme	Dominant Codes	Sample Reference Codes
Community Sector Partnerships	Teamwork	<ul style="list-style-type: none"> <li>IPAC teams, what are we going to do about it, brainstorming ideas, how do we make this work</li> <li>Extra set of ideas</li> </ul>
	Supportive Agencies	<ul style="list-style-type: none"> <li>RNAO practice lead</li> <li>Accreditation</li> <li>Compliance Advisors from the Ministry of Health</li> </ul>
<p>Quote:</p> <p>“We liaise with our RNAO all the time, right with their best practices. We have our contact their for a support to help us.” (Participant 9)</p>		

Note. The above table was synthesized from the responses of participants 1,4,13,14, & 18 (Source NVivo 15)

**Table 34**

Sub Theme	Dominant Codes	Sample Reference Codes
Education Meetings	Neighbourhood Educational Meetings	<ul style="list-style-type: none"> <li>Brings in a training element to the neighbourhood</li> <li>Monthly instruction</li> <li>IPAC nurse attendance for information</li> </ul>
	Regular Education	<ul style="list-style-type: none"> <li>More infection and prevention education</li> <li>Shared tips from the ministry</li> </ul>
	Explain why?	<ul style="list-style-type: none"> <li>How does it work?</li> <li>What to do in this particular context</li> <li>Well received if they know how to implement it.</li> </ul>
<p>Quote:</p> <p>“We have quarterly training in Surge Learning. These are repeated annually.” (Participant 7)</p>		

Note. The above table is synthesized from responses of participants 3,4,6,7,11,12,13,15,16,&19 (Source NVivo 15)

### Conceptual Dimension – Knowledge, Skills, and Capabilities Advancement

## EMBEDDING AIRBORNE INFECTION PREVENTION BEST PRACTICES IN LONG-TERM CARE HOMES: AN IMPLEMENTATION BLUEPRINT

### ***Theme – Competency Development Strategies***

**Table 35**

<b>Sub Theme</b>	<b>Dominant Codes</b>	<b>Sample Reference Codes</b>
Focused Knowledge and Skills Development	Online Approaches	<ul style="list-style-type: none"> <li>• Online modules</li> <li>• Videos – watch and listen on their own better than telling everyone in a group</li> <li>• Surge learning – modules like sterilization – updates everyone regularly</li> <li>• Back up with online education to saturate them a bit and not all at once</li> <li>• Quizzes attached</li> <li>• Under 70% quizzes, locked out, come back and find out what went wrong</li> </ul>
	Hands-on Training	<ul style="list-style-type: none"> <li>• Hands-on training and role playing</li> <li>• Practice, then make it become the normal culture</li> <li>• In person</li> <li>• Do it first and then demonstrate...here to support</li> <li>• Glow germ spray</li> </ul>
	In-Person Education	<ul style="list-style-type: none"> <li>• Best in person</li> <li>• They can ask questions, and you can demonstrate</li> <li>• Over-emphasize – lead by example</li> </ul>
	Require knowledge and skill-based	<ul style="list-style-type: none"> <li>• Need to have knowledge and skill-based</li> <li>• Give them the tools they need and education then it will stick better</li> </ul>
	E-mail tips and tricks	<ul style="list-style-type: none"> <li>• New info, tips and tricks, to make IP more interesting</li> <li>• Not too many e-mails – send once in a while – highlight what went well</li> </ul>
	Adult Learning Considerations	<ul style="list-style-type: none"> <li>• Do it three different ways</li> <li>• Repetition, keep doing it, varying degrees</li> <li>• Repeat every quarter, remind in online assignments</li> </ul>
	Break into Pieces	<ul style="list-style-type: none"> <li>• Not too many changes at once – smaller pieces – can ask questions or you see them work through a piece</li> <li>• Smaller pieces to get compliance across complexity – not always something small we can fix</li> <li>• How can we connect, is it a job routine, is it a visual aim ...break down and connect with people</li> <li>• Train staff on why. Rationale, Explanation</li> <li>• Have a discussion and ask questions</li> </ul>
<p>Quote:</p> <p>“We are always looking for newer videos. YouTube is a great resource for that kind of stuff” (Participant 8).</p>		

Note. The above table was synthesized from the responses of participants 1,2,3,4,5,6,7,8,9,10,11,12,13,15,16,17, & 18 (Source NVivo 15)

**Table 36**

## EMBEDDING AIRBORNE INFECTION PREVENTION BEST PRACTICES IN LONG-TERM CARE HOMES: AN IMPLEMENTATION BLUEPRINT

<b>Sub Theme</b>	<b>Dominant Codes</b>	<b>Sample Reference Codes</b>
Education Aids for Knowledge and Skill Development	Training sets for staff	<ul style="list-style-type: none"> <li>• Training sets on how to properly apply PPE</li> <li>• One-on-one education ...or if the entire neighbourhood is missing something</li> <li>• Activation happens where we meet on the floor – surge learning is read and forgotten</li> <li>• In-person education session – on things we feel are important</li> </ul>
	Teachable moment	<ul style="list-style-type: none"> <li>• Use after we finish audits or go out and meet with people one-on-one, not punitive</li> <li>• Education in the moment</li> <li>• When walking by people</li> <li>• Compounded by staff teaching new staff – teaching bad habits – get that back</li> </ul>
	Regular Training and Retraining	<ul style="list-style-type: none"> <li>• Quarterly training in surge</li> <li>• Personal mandatory training one day per year</li> <li>• New practice, routinely there for something, then revisit after a little bit</li> <li>• Gaps pop up – have another huddle or another education session on this</li> <li>• High turnover – retraining</li> </ul>
	Track education	<ul style="list-style-type: none"> <li>• Excel spreadsheet of education at onboarding</li> <li>• Track all in-the-moment teaching, if conversation multiple times, then move into coaching and work on education</li> </ul>

Quote:

“We go through donning and doffing, hand washing, how to properly wash goggles. The works. We find in person works best for our staff” (Participant 13).

Note. The above table was synthesized from the responses of participants 2,3,7,8,9,10,11,13,14,16,17,19 & 20  
(Source NVivo 15)

**Table 37**

## EMBEDDING AIRBORNE INFECTION PREVENTION BEST PRACTICES IN LONG-TERM CARE HOMES: AN IMPLEMENTATION BLUEPRINT

Sub Theme	Dominant Codes	Sample Reference Codes
Focused Instruction	Demonstration Applications	<ul style="list-style-type: none"> <li>• Repeat demonstration – make no assumptions that people will remember what happened last year</li> <li>• Neighbourhood demonstration – hand dye – shows effectiveness</li> <li>• Big thing to see how easily a virus can spread without precautions</li> <li>• Tool that shows how cough goes into hand – highlight masking</li> </ul>
	Public Health Resources	<ul style="list-style-type: none"> <li>• PH several courses with lots of video, then test knowledge</li> <li>• Great huddle resource</li> </ul>
	Peer monitoring	<ul style="list-style-type: none"> <li>• Lead RPN</li> <li>• Transfer their knowledge and practice adherence</li> <li>• Champions to spread accountability</li> </ul>
	Teach back	<ul style="list-style-type: none"> <li>• Teach back to ensure practicing appropriate – can identify missing knowledge right on the spot</li> </ul>
	Education from outside sources	<ul style="list-style-type: none"> <li>• Webinars, conferences to implement</li> </ul>
	IPAC lead connected to floor	<ul style="list-style-type: none"> <li>• Someone with expertise to help with ongoing education</li> <li>• Without role – no time for extra education</li> </ul>
<p>Quotes:</p> <p>“Public Health sent out a lot of self-assessments we could do to ensure that we are continuing the high level of infection control” (Participant 10).</p> <p>“Demonstrations are really quick, right, because they can ask questions and you can demonstrate that kind of right at the same time” (Participant 9).</p>		

Note. The above table was synthesized from the responses of participants 1,4,5,7,9,10,12,13,14,15,16,19, & 20  
(Source NVivo 15)

### ***Theme – Achieving Compliance***

**EMBEDDING AIRBORNE INFECTION PREVENTION BEST PRACTICES IN LONG-TERM CARE HOMES: AN IMPLEMENTATION BLUEPRINT**

**Table 38**

<b>Subtheme</b>	<b>Dominant Code</b>	<b>Sample Reference Codes</b>
Enabling Tools	Checklist and Audit Tools	<ul style="list-style-type: none"> <li>• Monthly checklists and audits</li> <li>• Tip sheet - resources at their fingertips</li> <li>• The infection control team and, management team are required to do audits</li> <li>• Share audits with employees</li> <li>• Regular audits and observations to monitor adherence</li> <li>• Weekly, monthly, scheduled and unscheduled compliance</li> <li>• Walk-through audits</li> <li>• Environmental services doing cleaning audits as well</li> <li>• Seeing the spread of infection, would know we are breaking practice routines</li> </ul>
	Evaluation	<ul style="list-style-type: none"> <li>• Year-end evaluation – IPAC quality indicators</li> <li>• IPAC goals, action plans to achieve as listed for home</li> <li>• Excel tracking tool ...track in the moment of teaching ...move on to coaching...ask to do a little more work on some education</li> </ul>
	Signs	<ul style="list-style-type: none"> <li>• Little made-up cards and signs as reminders</li> <li>• Standard isolation signs</li> </ul>
	Real-time risk assessment tool	<ul style="list-style-type: none"> <li>• Risk assessment at the point of care</li> <li>• How to don and doff right there so they remember how to do it</li> </ul>
	Public Health Assessment Tool	<ul style="list-style-type: none"> <li>• Public health assessments</li> <li>• Public health inspector to follow up on outbreak – towers set up right, right mask</li> </ul>
<p>Quote: “We have handwashing signage at all of our sinks. We have hand hygiene for alcohol-based hand sanitizer at every single hand sanitizer with instructions there” (Participant 20).</p>		

Note. The above table was synthesized from the responses of participants 1,2,3,4,5,6,7,8,9,10,11,12,14,15,16,17,19,& 20 (Source NVivo 15)

**Table 39**

<b>Subtheme</b>	<b>Dominant Code</b>	<b>Sample Reference Codes</b>
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## EMBEDDING AIRBORNE INFECTION PREVENTION BEST PRACTICES IN LONG-TERM CARE HOMES: AN IMPLEMENTATION BLUEPRINT

Reinforce Personal Compliance and Capability	Walk through	<ul style="list-style-type: none"> <li>• Observe practices being done, and how</li> </ul>
	Annual competencies review	<ul style="list-style-type: none"> <li>• Annual competencies review</li> <li>• Complete annual competence of their infection control policies and mandatory annual review</li> <li>• Monthly training videos and audits</li> </ul>
	Self Assessment	<ul style="list-style-type: none"> <li>• Self Assessment</li> </ul>
	Awareness of Expectations	<ul style="list-style-type: none"> <li>• Present expectations from public health feedback</li> <li>• Maintains transparency with staff</li> </ul>
	Proactive risk assessment	<ul style="list-style-type: none"> <li>• Consider hazards in preparation of the event. What might we do?</li> <li>• Specific examples at neighbourhood meetings</li> </ul>
	Daily communication in Outbreak	<ul style="list-style-type: none"> <li>• Sometimes more than daily ...have general questions ..or if an issue ...they can help with practice questions</li> </ul>
	Inspection	<ul style="list-style-type: none"> <li>• Public health goes through what we are doing, and then we work with them to make changes</li> </ul>

Quote:

“We do a lot of teaching by walking around” (Participant 12).

Note. The above table was synthesized from the responses of participants 1,3,6,7,8,9,10,13,15,16,17 & 20 (Source NVivo 15)

**Table 40**

Subtheme	Dominant Code	Sample Reference Codes
Develop Culture	Infection Control Cart	<ul style="list-style-type: none"> <li>• Demonstrate, information, information booklets, education</li> <li>• Box of gloves, hand sanitizers</li> <li>• Laminated signs for easy reference</li> </ul>
	Consistent Bring Forward	<ul style="list-style-type: none"> <li>• At neighbourhood meeting, even when not in outbreak</li> <li>• Weekly, monthly</li> <li>• Do it every time instead of guessing</li> </ul>
	Build a culture of infection control	<ul style="list-style-type: none"> <li>• All want to get out of the outbreak together – internal mentorship</li> <li>• Drives accountability</li> </ul>
	Constructive Feedback Session	<ul style="list-style-type: none"> <li>• Notice issues – constructive feedback</li> <li>• Give feedback while they are doing it</li> </ul>
	Goals	<ul style="list-style-type: none"> <li>• Goals for each IPAC lead ... one for each home</li> <li>• Goals for the division, then each department has goals under that</li> </ul>
	Infection prevention topics in the huddle	<ul style="list-style-type: none"> <li>• Keeps fresh in people's minds</li> </ul>

Quote:

“The biggest thing that I find is helpful is in the moment giving feedback while they are doing it” (Participant 14).

Note. The above table was synthesized from the responses of participants 1,5,10,11,12,14,16,18, & 19 (Source NVivo 15)

### Conceptual Dimension – Tactical Planning

# EMBEDDING AIRBORNE INFECTION PREVENTION BEST PRACTICES IN LONG-TERM CARE HOMES: AN IMPLEMENTATION BLUEPRINT

## ***Theme -Dissemination Methods***

**Table 41**

<b>Sub Theme</b>	<b>Code Category</b>	<b>Sample Reference Codes</b>
Use of a structured methodological introduction, spread and dissemination of the Infection Prevention Guideline	Use a structural approach to dissemination	<ul style="list-style-type: none"> <li>• Leadership Group</li> <li>• Compare to existing policies – how big of a change</li> <li>• How will we implement</li> <li>• Project plan</li> <li>• Leadership training – cascade down to team huddles and formalized training sessions</li> <li>• Announcement first, having a meeting, sent to staff, break it down to facilitate</li> </ul>
	Create an Action Plan and a work plan	<ul style="list-style-type: none"> <li>• Develop a work plan from the review and then a work plan</li> <li>• Assess what is in place and what is needed</li> <li>• How are we going to educate and train?</li> </ul>
	Tweak Policies and Procedures	<ul style="list-style-type: none"> <li>• New emerging evidence – work on policies pertaining to new evidence</li> <li>• Make sure management and physicians are ok with changes that need to be made</li> </ul>
	Review the training requirement	<ul style="list-style-type: none"> <li>• Training requirements reviewed</li> <li>• Huge training or tweaks?</li> </ul>
<p>Quote: “We look at our practices right now, identify any gaps, comparing it to the new emerging trends, and then create an action plan and develop the work plan from that” (Participant 7).</p>		

Note. The above table was synthesized from the responses of participants 1,3,4,5,6,7,8,9,10,11,12,13,14,15,16,17,18,19 &20. (Source NVivo 15)

**Table 42**

## EMBEDDING AIRBORNE INFECTION PREVENTION BEST PRACTICES IN LONG-TERM CARE HOMES: AN IMPLEMENTATION BLUEPRINT

Subtheme	Dominant Code	Sample Reference Codes
Focused Meetings	Huddles as a primary dissemination tool	<ul style="list-style-type: none"> <li>• Small groups</li> <li>• Nursing station with the incoming shift</li> <li>• Person-to-person connection</li> <li>• Daily huddles with the quality improvement coordinator</li> <li>• Helps to uncover challenges coming about, new direction, or educational opportunity</li> <li>• Talk about what the ministry noticed</li> <li>• Short, focused training as a long session gets lost in translation</li> </ul>
<p>Quote:</p> <p>“If new guidelines come out, any new procedures and practices that have come forward since our last outbreak, we make sure that that is huddled in front of staff. We like to do it face to face” (Participant 18).</p>		

Note. The above table was synthesized from the responses of participants 4,5,6,7,8,9,11,12,13,14 &15 (Source NVivo 15)

### ***Theme – Contingency Development***

**Table 43**

Sub Theme	Dominant Codes	Sample Reference Codes
Physical Plant Layout Deficiencies	Layout	<ul style="list-style-type: none"> <li>• Dirty utility room down the hall</li> <li>• Dining room size – two at a table, partitions needed</li> <li>• Difficult dividing a neighbourhood home</li> <li>• One lunchroom for staff</li> <li>• Space for families</li> </ul>
	Poor physical barriers	<ul style="list-style-type: none"> <li>• Need for splash shield</li> <li>• Centralized dining room</li> <li>• Once care centres – hard to assign staff</li> </ul>
	Air quality	<ul style="list-style-type: none"> <li>• Circulation poor</li> <li>• Negative-pressure rooms are needed</li> </ul>
	Storage	<ul style="list-style-type: none"> <li>• PPE and equipment storage</li> </ul>
	Age of Home - Repairs	<ul style="list-style-type: none"> <li>• HVAC issue</li> </ul>
	Need to sanitize equipment	<ul style="list-style-type: none"> <li>• Hard to sanitize between use – e.g., lifts</li> </ul>
	Staff Separation	<ul style="list-style-type: none"> <li>• For eating (mask down – 6 feet away)</li> </ul>
<p>Quote:</p> <p>“During COVID and with outbreaks, we had to make lunch rooms on the neighbourhoods to cohort our staff that way to prevent the spread through the home” (Participant 9).</p>		

Note. This table is a synthesis of the responses of participants 2,5,6,7,9,10,12,13,14,15,17,18,&19 (Source NVivo 15)

**Table 44**

Sub Theme	Dominant Codes	Sample Reference Codes
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## EMBEDDING AIRBORNE INFECTION PREVENTION BEST PRACTICES IN LONG-TERM CARE HOMES: AN IMPLEMENTATION BLUEPRINT

Resource Deficiency	Limited resources	<ul style="list-style-type: none"> <li>• Insufficient PPE and outdated equipment</li> <li>• Need to be properly functioning and tested</li> <li>• Staffing and volunteer needs</li> <li>• Positions no longer available</li> <li>• Too difficult for one-on-one supports – patient</li> <li>• The ministry doesn't always provide funding for a new requirement</li> <li>• Housekeeping key</li> <li>• Budget constraints affect things like auditing</li> </ul>
	Time	<ul style="list-style-type: none"> <li>• To stay updated, do audits, and training</li> <li>• For proper discussion on an issue</li> <li>• Scrambling to cover shifts</li> <li>• Friday night outbreak ...make sure everyone is aware</li> <li>• Time to 'don and doff'</li> </ul>
	Span of Control	<ul style="list-style-type: none"> <li>• Hard to contact every single individual to ensure education is grasped</li> </ul>
	Rural somewhat Isolated	<ul style="list-style-type: none"> <li>• Longer for people to come out</li> </ul>

Quote:

“We have smaller independent homes. They don't have much leeway. So if the ministry doesn't back it with money, there is no way they could do it without sacrificing staff, or care, or repairs, something else that has to go on” (Participant 12).

Note. The above table is synthesized from the responses of participants 1,3,4,5,7,9,10,11,12,14,16,17,18 & 19  
(Source NVivo 15)

**Table 45**

## EMBEDDING AIRBORNE INFECTION PREVENTION BEST PRACTICES IN LONG-TERM CARE HOMES: AN IMPLEMENTATION BLUEPRINT

Sub Theme	Dominant Codes	Sample Reference Codes
Resident Dynamic and Rx Philosophy	Treat as a resident home	<ul style="list-style-type: none"> <li>• Need to remember these are people's homes</li> <li>• Everything has to be portable</li> <li>• Single-use things need to put out</li> <li>• Guidelines unaligned with the home environment</li> <li>• Can't lock someone in the room or force them to wash their hands</li> <li>• Isolation is a big barrier – hard to meet regulations – food temperature – assistance needed</li> <li>• No control over families coming in</li> <li>• Cannot lock institutional (hand hygiene units in each room)</li> <li>• Cognitive behaviour preventing isolation</li> </ul>
	Unpredictable	<ul style="list-style-type: none"> <li>• Outbreak Friday night – make sure staff are confident to start the process and do it right</li> </ul>
	Cohort implication	<ul style="list-style-type: none"> <li>• HR barriers – might not have enough staff for a unit</li> </ul>
	Resident is coming sick from the hospital	<ul style="list-style-type: none"> <li>• Needs to be in isolation 4 days</li> </ul>
	Resident compliance	<ul style="list-style-type: none"> <li>• Dementia, not keeping the mask on</li> </ul>
<p>Quotes:</p> <p>“These are their houses. We have to understand that” (Participant 6).</p> <p>“I can't lock someone in the room and force them to wash their hands. There's like a lot of those barriers that you just got to try and think outside the box” (Participant 8).</p>		

The above table is synthesized from the responses of participants 4,6,7,8,9,10,12,17, &18 (Source NVivo 15)

### Conceptual Dimension – Attention and Reinforcement

#### *Theme – Alerting Worker Attention*

**EMBEDDING AIRBORNE INFECTION PREVENTION BEST PRACTICES IN LONG-TERM CARE HOMES: AN IMPLEMENTATION BLUEPRINT**

**Table 46**

<b>Sub Theme</b>	<b>Dominant Codes</b>	<b>Sample Reference Codes</b>
Use of Diverse Communication Tactics	Supportive communication methods	<ul style="list-style-type: none"> <li>• Verbal opportunity to prepare staff for what is coming at a team meeting, monthly team meetings, expectations, and online training</li> <li>• Huddle, one-to-one, communication memo, posted fact sheet, reference sheet</li> <li>• Communication depends on the level of importance and how much skill or clinical change is needed by front-line staff</li> <li>• e-mail – to describe when and how</li> <li>• memos to families and elders</li> <li>• ‘Bug of the month’</li> </ul>
	Visual aids	<ul style="list-style-type: none"> <li>• Handwashing posters, step-by-step processes and charts in high-traffic areas like handwashing stations</li> <li>• Back of the door or the toilet stall</li> </ul>
<p>Quote:</p> <p>“I try to communicate in multiple different ways to try to get to employees. The first one I would do verbal ...the second one would be I would follow up with an email within a few days ...and the third one, there would be online training” (Participant 2).</p>		

Note. The above table was synthesized from the responses of participants 1,2,4,6,8,10,11,14,15,& 17 (Source NVivo 15)

**Table 47**

<b>Sub Theme</b>	<b>Dominant Codes</b>	<b>Sample Reference Codes</b>
Cognitive Aids	Signage	<ul style="list-style-type: none"> <li>• Coloured signage</li> <li>• Outside door</li> </ul>

## EMBEDDING AIRBORNE INFECTION PREVENTION BEST PRACTICES IN LONG-TERM CARE HOMES: AN IMPLEMENTATION BLUEPRINT

		<ul style="list-style-type: none"> <li>• No room for error even when delivering meds</li> <li>• Signs for the main door</li> <li>• Poster in lunchroom- how to handwash, hold your cough, where to wear a mask</li> <li>• Colour system – yellow for laundry linen, red label for cytotoxic</li> </ul>
	Quick reference cards	<ul style="list-style-type: none"> <li>• Quick reference cards all around the LTC home</li> <li>• Very clear about what expectations are</li> <li>• Reference sheets, fact sheets</li> <li>• Algorithm to follow</li> </ul>
	Electronic learning modules	<ul style="list-style-type: none"> <li>• Surge learning</li> <li>• Videos</li> <li>• Let them know right away, and then they can watch a video or do a course online</li> <li>• Videos to connect to memory better than reading policies</li> </ul>
	Risk indicator sheet as cognitive trigger	<ul style="list-style-type: none"> <li>• Point of care risk assessment reminder – laminated at every door that you need to use PPE</li> <li>• Automatic trigger – knows something is there – stops and triggers them to see</li> </ul>
	Lanyards for memory aids	<ul style="list-style-type: none"> <li>• Help staff remember, for a specific moment</li> <li>• Simple reminder tools</li> </ul>
	Infectious disease kit	<ul style="list-style-type: none"> <li>• Kit for infectious diseases – whether airborne or gastro (signs, bundles, checklists)</li> </ul>

Quote:

“We have cards on every single isolation cart. They are all laid out the exact same so people can refer to it at that time” (Participant 17).

Note. The above table was synthesized from the responses of participants 1,2,3,4,5,6,7,8,9,10,11,12,13,15,16,17,18,19,20 (Source NVivo 15)

**Table 48**

Sub Theme	Dominant Codes	Sample Reference Codes
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## EMBEDDING AIRBORNE INFECTION PREVENTION BEST PRACTICES IN LONG-TERM CARE HOMES: AN IMPLEMENTATION BLUEPRINT

Purposeful Communication Tactics	Email of newsletter	<ul style="list-style-type: none"> <li>• Monthly reminder of best practices, implementing new practices, and information to keep awareness</li> <li>• Email about who is infectious, or awaiting a swab, or approximately when they will get out of the outbreak.</li> </ul>
	Interactive and Fun	<ul style="list-style-type: none"> <li>• Fun and interactive to grasp attention – YouTube video parodies – rapping about C Deficile</li> <li>• Start the session with a fun infection prevention activity</li> <li>• Fun gets better interaction and engagement</li> <li>• Interactive put on N95s – demonstrate at staff meeting</li> <li>• Fun song, do something wrong ...then do it right – assigned on surge learning – education with someone you know</li> <li>• Housekeeper involved – how to clean a room right – involved on TV</li> </ul>
	Broad communication to families	<ul style="list-style-type: none"> <li>• If going into an outbreak, all staff and families are notified – automatic service</li> <li>• Communication with families of outbreaks, big or small – then only allow essential caregivers</li> </ul>
	Live Document for Surveillance	<ul style="list-style-type: none"> <li>• Live Excel spreadsheet – document all surveillance measures – not on paper</li> <li>• All reports – staff can record if they come across an infection or precaution</li> <li>• Know when it started, resolved, and what outcomes were – just support staff</li> </ul>
	Electronic reminder	<ul style="list-style-type: none"> <li>• Remind about audits</li> </ul>

Quote:

“Just make things a little bit more fun or novel. Then you would get better interaction and engagement”  
(Participant 5).

Note. The above table was synthesized from the responses of participants 1,4,5,6,7,12,13,15,& 16 (Source NVivo 15)

### ***Theme – Reflecting and Reinforcing***

**Table 49**

## EMBEDDING AIRBORNE INFECTION PREVENTION BEST PRACTICES IN LONG-TERM CARE HOMES: AN IMPLEMENTATION BLUEPRINT

<b>Subtheme</b>	<b>Dominant Codes</b>	<b>Sample Reference Codes</b>
Review, Analysis and Reflection	Public Health Recommendations	<ul style="list-style-type: none"> <li>• Source for conducting audits and implementing practice – non-judgmental</li> <li>• Public health attend and give rational, reinforce trust, and provide evidence to support change</li> </ul>
	Audit and incident tracking	<ul style="list-style-type: none"> <li>• Speedy audit application</li> <li>• Missed moment of hand hygiene or error</li> <li>• Routine audits, incident tracking, and follow-up</li> <li>• Monthly audit – What was done right? Done wrong?</li> <li>• Tabulated results for the IPAC committee</li> <li>• When non-compliance occurs, develop action plans and patient education as needed</li> <li>• Use modified duties staff – different points of view, auditing</li> <li>• Share audits at neighbourhood meetings</li> <li>• Two homes compare results and incident tracking</li> </ul>
	Surveillance	<ul style="list-style-type: none"> <li>• Infection rates and absences</li> <li>• Quarterly tracking reports</li> <li>• Lead gathers stats – where compliant, where infection, where seeing this, why seeing this more than in one neighbourhood</li> <li>• See when someone comes from the hospital – put in isolation – came from analysis trend</li> </ul>
	See if it's working	<ul style="list-style-type: none"> <li>• Go out and evaluate if it is working</li> <li>• Is the change we observe the change we like?</li> <li>• Staff feedback on did it work</li> </ul>
	Positive Feedback	<ul style="list-style-type: none"> <li>• Linked to staff adherence, compliance culture</li> <li>• Positive reinforcement of specific skills</li> </ul>
	Leadership Team Review	<ul style="list-style-type: none"> <li>• Look at a year's worth of audit</li> <li>• Discrepancies ...find strategies for improvement</li> <li>• Brainstorm ideas with other LTC homes</li> <li>• Review results as a team to enhance comprehension</li> </ul>
<p>Quote:</p> <p>“The audits we do have just hard and fast numbers that we collect. So when we do the audits, we actually see how many missed moments of hand hygiene or how many errors there were” (Participant 12).</p>		

Note. The above table was synthesized from the responses of participants 1,4,6,7,10,12,13,19,& 20 (Source NVivo 15)

**Table 50**

<b>Subtheme</b>	<b>Dominant Codes</b>	<b>Sample Reference Codes</b>
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## EMBEDDING AIRBORNE INFECTION PREVENTION BEST PRACTICES IN LONG-TERM CARE HOMES: AN IMPLEMENTATION BLUEPRINT

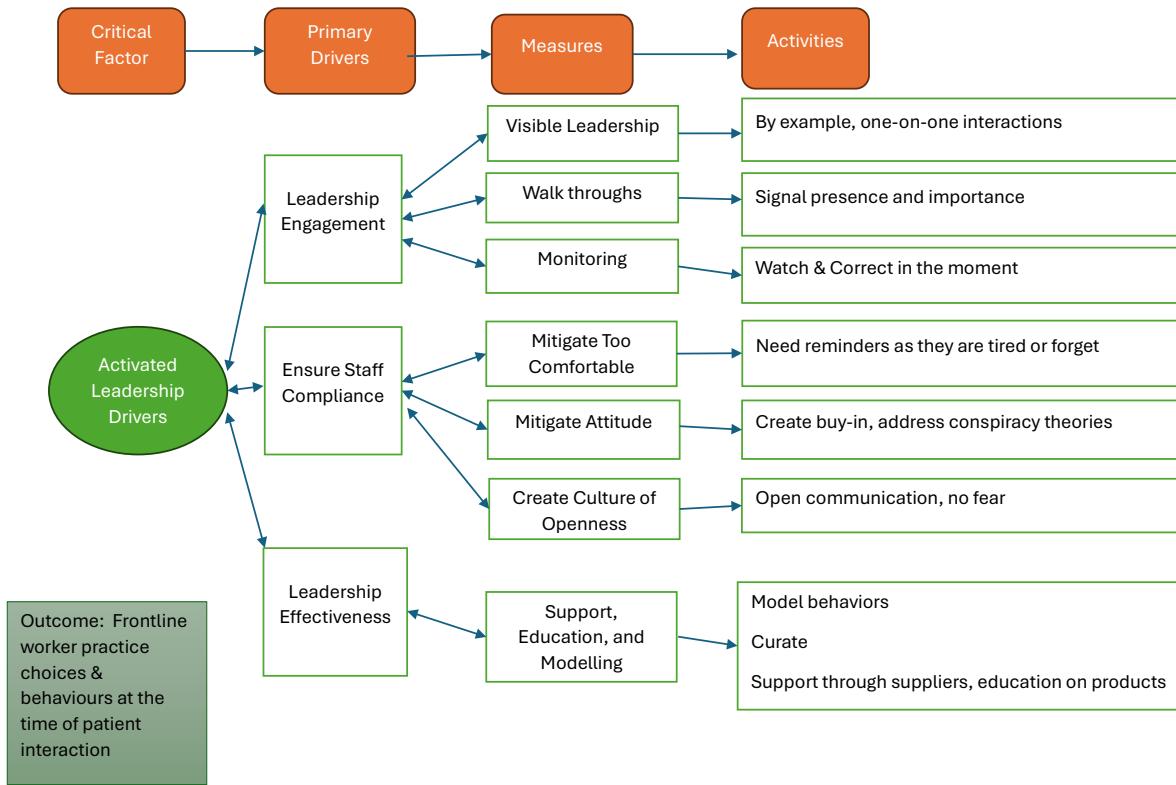
Evaluation	Time for reflection	<ul style="list-style-type: none"> <li>• Proper time to learn something</li> <li>• Audits, tracking trends – new culture on focusing on best practice</li> </ul>
	Constant Evaluation	<ul style="list-style-type: none"> <li>• Has to be followed to see if effective – ensure practice followed</li> </ul>
	Top of mind	<ul style="list-style-type: none"> <li>• Keep at top of mind</li> </ul>
	Audit for change	<ul style="list-style-type: none"> <li>• Audit for change with purpose</li> </ul>

Quote:  
 “The evaluation piece has to happen to ensure that it is being done and it's being followed and it's effective. I would think that that would be the key piece of getting the information out and ensuring best practices followed” (Participant 6).

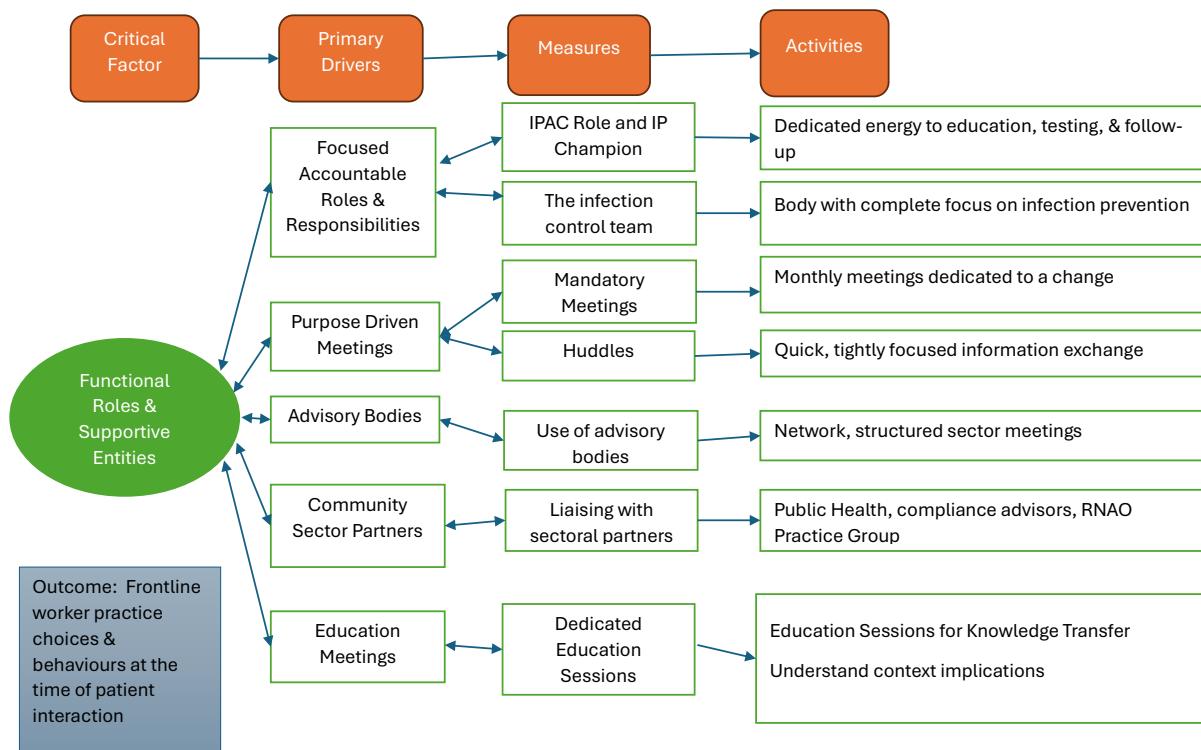
Note. The above table was synthesized from the responses of participants 1,6,7,& 9 (Source NVivo 15)

### Appendix M – Driver Diagrams for Critical Factors

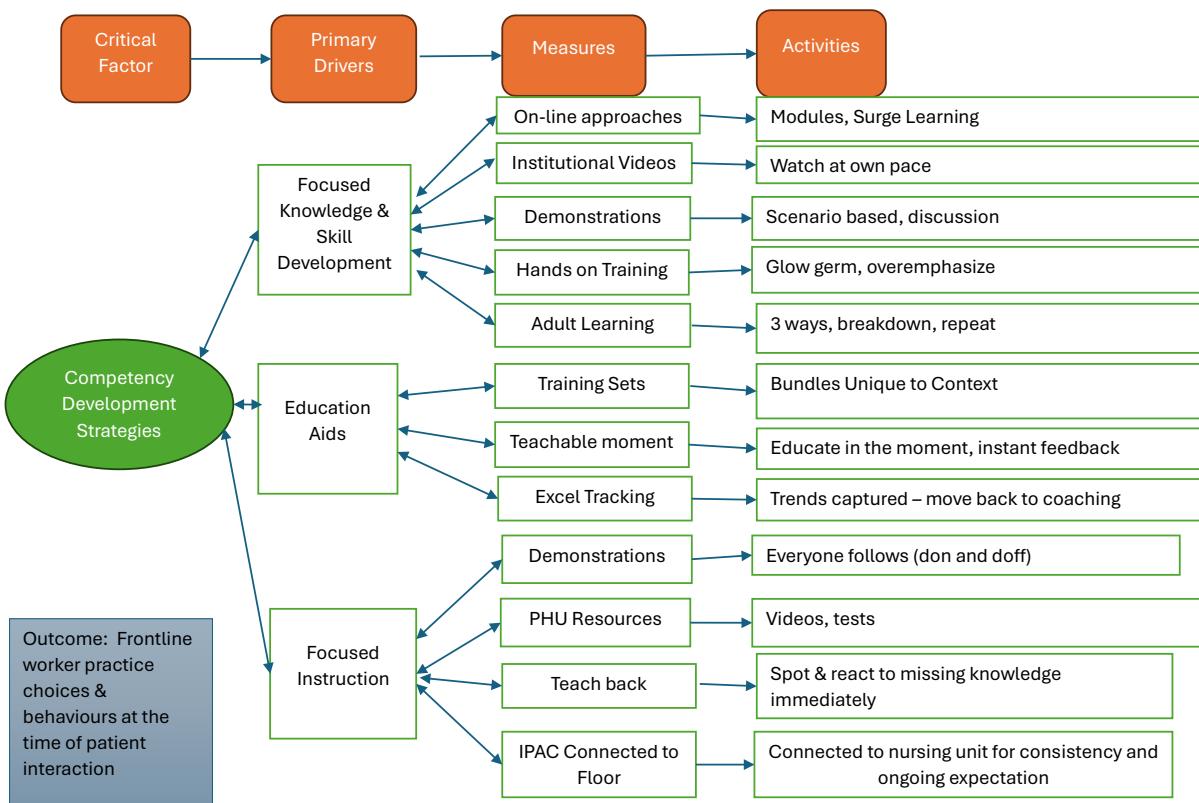
## EMBEDDING AIRBORNE INFECTION PREVENTION BEST PRACTICES IN LONG-TERM CARE HOMES: AN IMPLEMENTATION BLUEPRINT



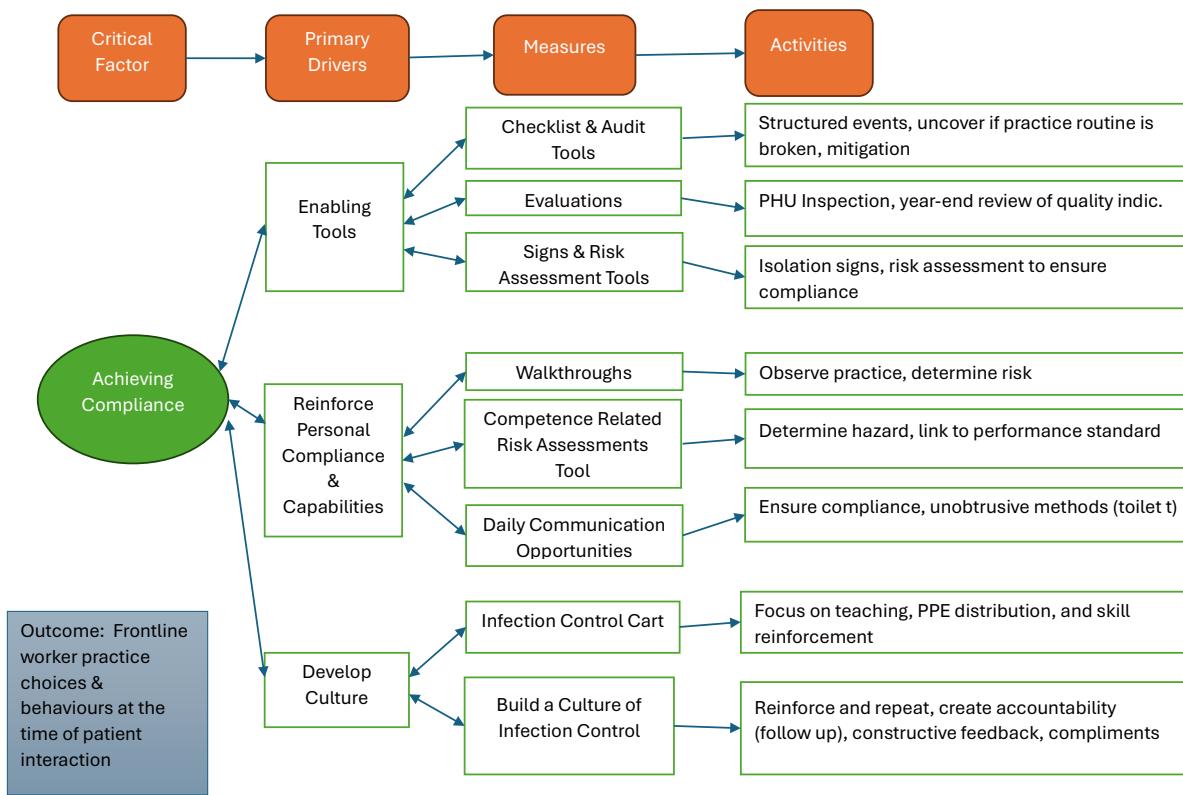
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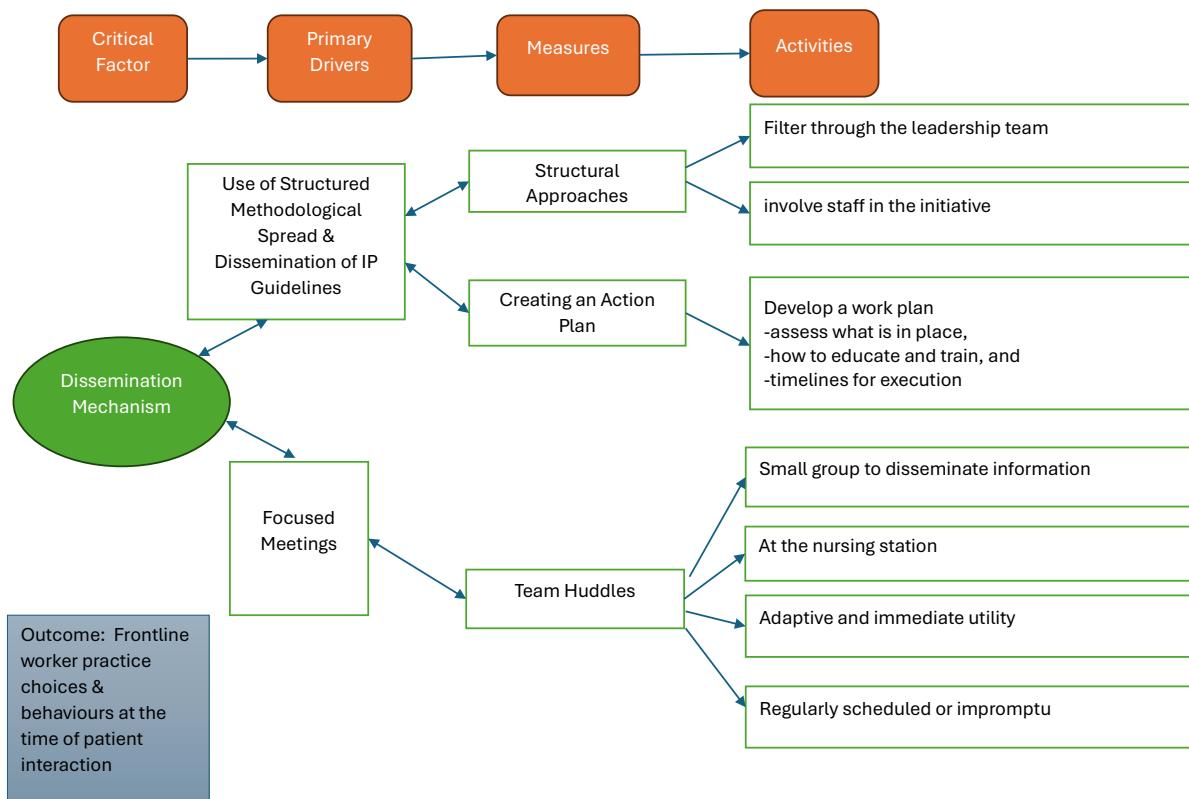
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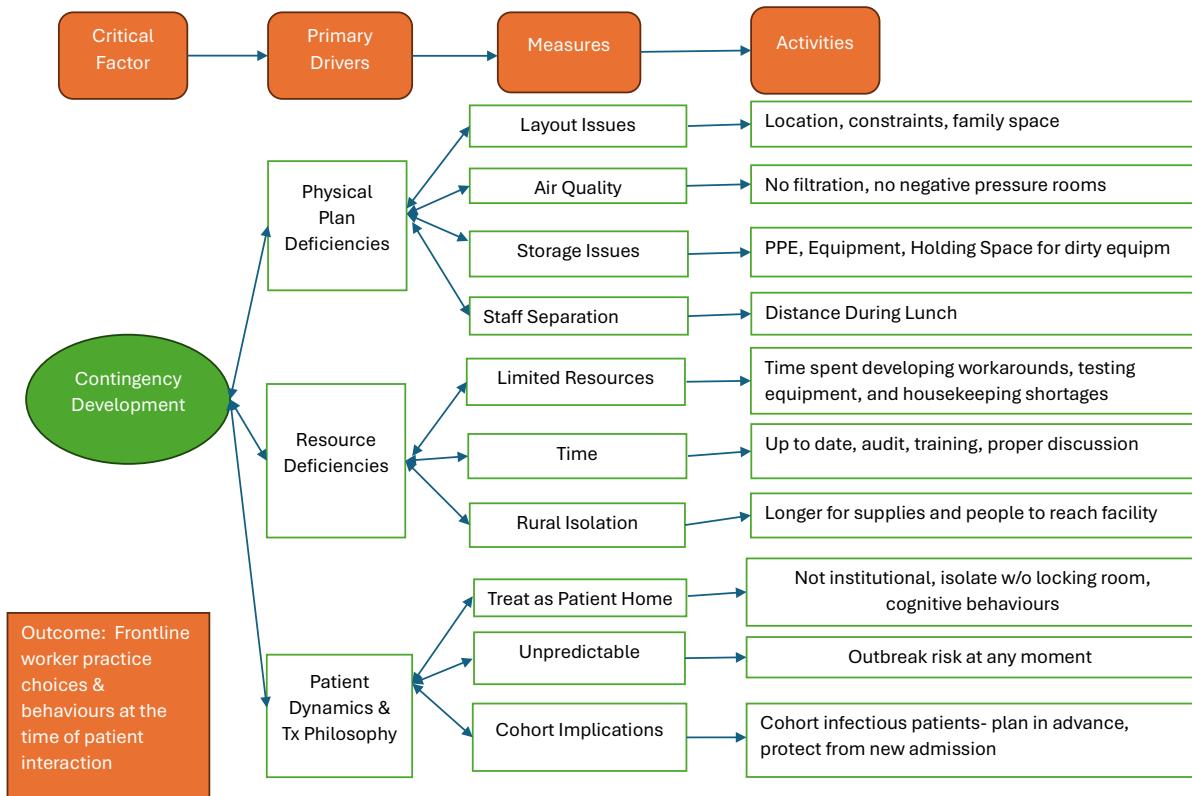
## EMBEDDING AIRBORNE INFECTION PREVENTION BEST PRACTICES IN LONG-TERM CARE HOMES: AN IMPLEMENTATION BLUEPRINT



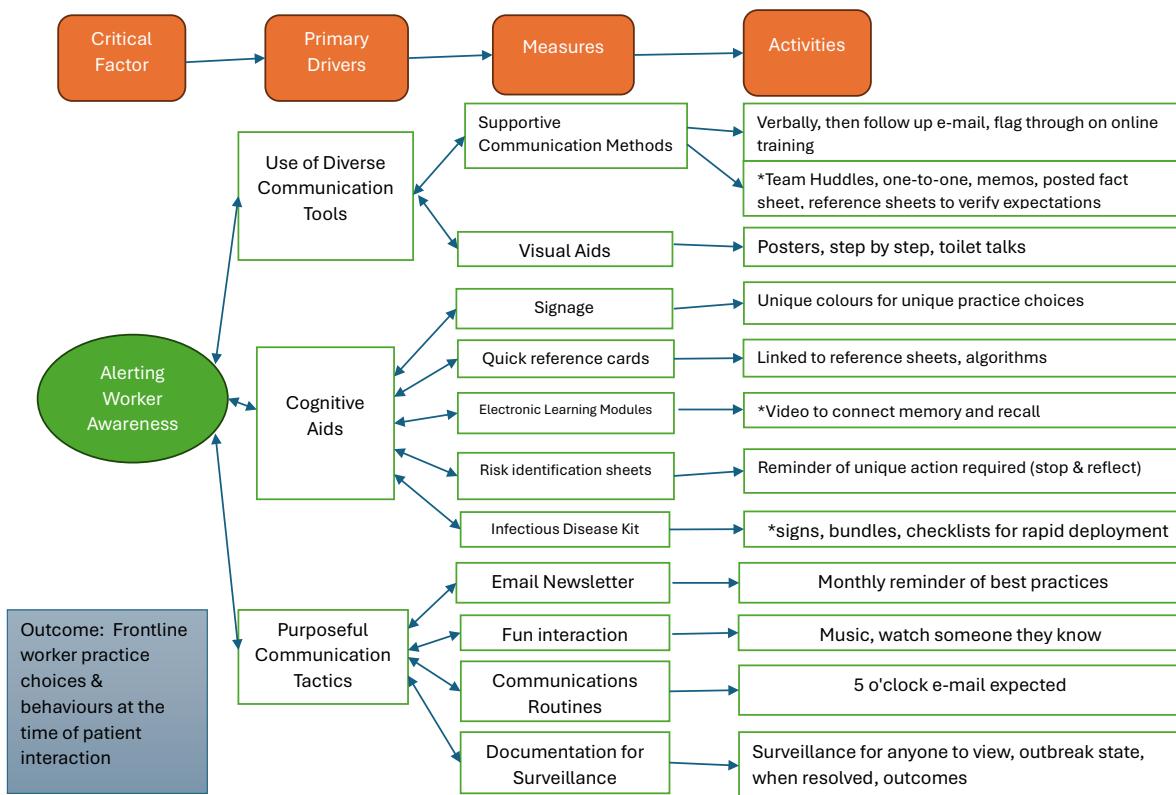
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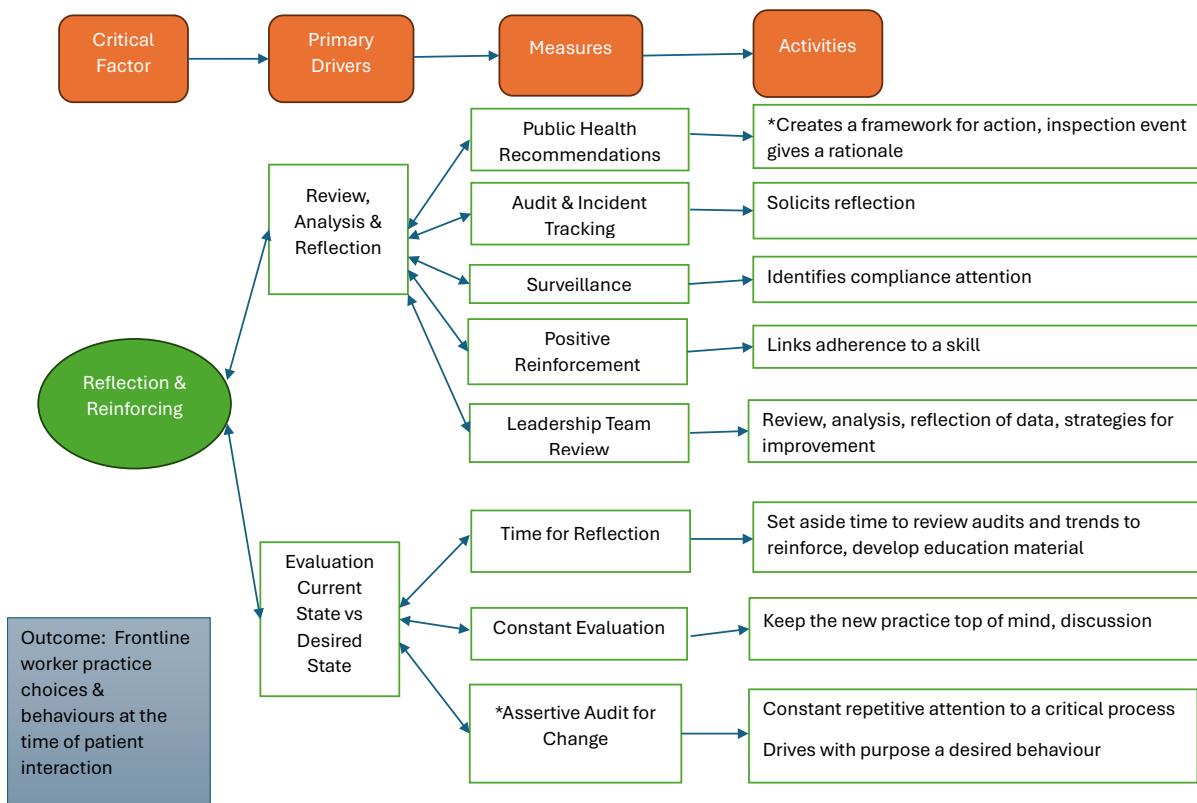
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## Appendix N – Certification of Ethics Approval



### CERTIFICATION OF ETHICAL APPROVAL

The Athabasca University Research Ethics Board (REB) has reviewed and approved the research project noted below. The REB is constituted and operates in accordance with the current version of the Tri-Council Policy Statement: Ethical Conduct for Research Involving Humans (TCPS2) and Athabasca University Policy and Procedures.

**Ethics File No.:** 25895

**Principal Investigator:**

Mr. Ralph Ganter, Graduate Student  
Faculty of Business\Doctor of Business Administration (DBA)

**Supervisor:**

Dr. Kam Jugdev (Supervisor)

**Project Title:**

How to Embed Best Practices for Airborne Infection Prevention: A Blueprint for Implementation Approaches in Rural Long-Term Care Homes

**Effective Date:** December 13, 2024

**Expiry Date:** December 12, 2025

**Restrictions:** Any modification/amendment to the approved research must be submitted to the AUREB for approval prior to proceeding. Any adverse event or incidental findings must be reported to the AUREB as soon as possible, for review.

Ethical approval is valid **for a period of one year**. A request for renewal must be submitted and approved by the above expiry date if a project is ongoing beyond one year.

An Ethics Final Report must be submitted when the research is complete (*i.e. all participant contact and data collection is concluded, no follow-up with participants is anticipated and findings have been made available/provided to participants (if applicable)*) or the research is terminated.

**Approved by:**

**Date: December 13, 2024**

Marta Massi, Chair  
Faculty of Business, Departmental Ethics Review Committee