4-1-2020

Healthcare Provider Overlap on Evidenced-Based Practice in Intubated Patients Using the Theoretical Domain Framework: A Case Study

Katie Bull
Concordia University - Portland, katiebull05@gmail.com

Recommended Citation

Concordia University - Portland

CU Commons

4-2020

Healthcare Provider Overlap on Evidenced-Based Practice in Intubated Patients Using the Theoretical Domain Framework: A Case Study

Katie Bull
Concordia University - Portland

Follow this and additional works at: https://commons.cu-portland.edu/edudissertations

Part of the Critical Care Nursing Commons, Education Commons, and the Interprofessional Education Commons

---

Concordia University–Portland

College of Education

Doctorate of Education Program

WE, THE UNDERSIGNED MEMBERS OF THE DISSERTATION COMMITTEE

CERTIFY THAT WE HAVE READ AND APPROVE THE DISSERTATION OF

Katie Michelle Spitler Bull

CANDIDATE FOR THE DEGREE OF DOCTOR OF EDUCATION

David L. Kluth, Ed.D., Faculty Chair Dissertation Committee

Mary Amick, Ed.D., Content Specialist

Barbara Archer, D.P.A., M.B.A., Content Reader

Healthcare Provider Overlap on Evidenced-Based Practice in Intubated Patients Using the

Theoretical Domain Framework: A Case Study

Katie Spitler Bull

Concordia University–Portland

College of Education

Dissertation submitted to the Faculty of the College of Education

in partial fulfillment of the requirements for the degree of

Doctor of Education in

Transformational Leadership

David L. Kluth, Ed.D., Faculty Chair Dissertation Committee

Mary Amick, Ed.D., Content Specialist

Barbara Archer, D.P.A., M.B.A., Content Reader

Concordia University–Portland

2020

Abstract

Intubation by endotracheal or tracheostomy means is a common life-saving intervention bearing significant, yet preventable risk. Evidence-based practice (EBP), intended to mitigate risk, is often inconsistently adhered to by healthcare providers (HCPs) due to a variety of factors, leaving patients vulnerable to adverse outcomes such as ventilator-associated pneumonia or tracheostomy-related stenosis. A review of the literature identified socially related barriers resulting from overlapping roles and expectations of primary HCPs. Little research has been conducted to understand the impact of overlap on EBP adherence. Using the Theoretical Domains Framework (TDF), this case study explored HCP overlap in one critical care unit in the southeastern U.S using convenience sampling of nurses, doctors, and respiratory therapists. Data collection was performed using semistructured interviews. Manual coding and analysis were performed to identify themes among the participants noting a strong frequency of social and belief domain-related findings. This study confirmed social and belief TDF domains are highly impactful in adhering to EBP specific to MV/T patients. Conclusions recommend social and belief domains should be considered when developing strategies for increasing EBP adherence.

Keywords: evidence-based practice, adherence, mechanically ventilated, intubated, intubation, tracheostomy, Theoretical Domain Framework

Dedication

I dedicate this research to my nursing profession; to those who give themselves wholly for the

sake of others. May this continue to guide informed decision making to, in some small way, ease

the burden of change in an ever-dynamic environment.

Acknowledgements

My sincerest gratitude to my Ed.D. committee. Your steadfast guidance and support have been vital to the completion of this research during unprecedented times. Dr. Amick and Dr. Archer, your thoughtful feedback, warm support, and expertise provided critical insight for this dissertation development. Dr. Kluth, there are no words to quantify my appreciation. Your commitment to quality research and higher education is only surpassed by your kindness. Thank you for encouraging me to pursue a passion even when it meant starting over.

Table of Contents

List of Tables

List of Figures

Chapter 1: Introduction

Introduction

      Breath is the essence of life as a required physiological function. At times, breathing requires medical intervention (McConnell et al., 2016) using endotracheal or tracheostomy tubes to facilitate artificial breathing or *mechanical ventilation. Endotracheal* tubes are medical devices inserted into the mouth or nose while *tracheostomy* tubes are surgically inserted in the neck. These tubes descend into the trachea allowing healthcare providers to provide ventilation to the patient. The use of the endotracheal tube, for mechanical ventilation or the use of a tracheostomy tube (*MV/T*) bears risks (Wagner, Hardin-Pierce, Welsh, & Johnson, 2018). The artificial devices place pressure on delicate tissues and anatomical structures while impacting natural defense mechanisms. Vulnerable patients depend on the skills and knowledge of their experienced healthcare providers.

      Fortunately, medical and nursing research provides guidelines to support the most up-to-date care, referred to as *evidence-based practice* (EBP) to minimize associated risks (Timsit, Esaied, Neuville, Bouadma, & Mourvillier, 2017). EBP is the result of well-studied, curated, and synthesized research and most often published by large, well-known authority groups such as the Centers for Disease Control and Prevention (CDC), the World Health Organization (WHO), or major professional associations such as the American Nurses Association (ANA). EBP is readily available through online sites, journals, and in healthcare reference materials like textbooks. Continuing education, an on-going educational requirement for most licensed healthcare providers in the U.S., also includes updated EBP guidelines.

      Despite the existence of evidence, EBP is not readily translated into routine care, resulting in often preventable complications (Jun, Kovner, & Stimpfel, 2016). One study noted a

rate of EBP adherence in one critical care unit to be approximately 24% (Jun et al., 2016).

Barriers to EBP adherence are numerous and can include behavioral, cognitive, or physical

influences (Jannson, Ala-Kokko, Ylipalossari, Syrjala, & Kyngas, 2013; Tucker, 2019). After a

review of the literature in Chapter 2, a theme of social factors related to the overlapping of roles

emerged amongst the studies researching barriers to EBP adherence in MV/T healthcare

providers. This chapter discusses this theme in detail.

EBP can reduce the risk of MV/T related complications; however, it fails when not

adhered to by the HCPs (Nyeo, Ting, & Tho, 2016). Complications, or preventable harms, of this

population vary widely and can include hospital acquired infections (HAIs) like ventilator

associated pneumonia (VAP) (Klompas et al., 2014), severe skin breakdown, and/or tracheal

damage such as the creation of false tracheal passages into surrounding structures (Morris,

Whitmer, & McIntosh, 2014). Preventing MV/T complications is significant. Almost one million

patients use an endotracheal or tracheostomy tube each year in the U.S. (Cheung & Napolitano,

2014; McConnell et al., 2016). Preventable harms, like described, cost the U.S. over one trillion

dollars, or approximately one-third of annual healthcare expenditure and approximately 100,000

deaths per year (Fischer, 2016; Jun et al., 2016). VAP, for example, is a HAI isolated only to this

group; however, VAP is the most lethal and second most common HAI. Thus, the impact of

increasing EBP adherence to reduce MV/T complications rates would be impactful for patients,

the healthcare system, and to the greater economy.

This chapter provides a summary of the identified research problem, which is a lack of

EBP adherence in MV/T *healthcare providers* (HCPs), placing patients at risk for preventable

harm. Overlapping roles, tasks and expectations, aligning with the *Theoretical Domains*

Framework (TDF) social domains are identified by several researchers (Abode et al., 2016;

Guthrie et al., 2018; Klompas et al., 2013; McConnell et al., 2016; Southcott et al., 2019; Welton et al., 2016); however, a lack of data exists in the MV/T literature using the TDF (Goddard et al., 2018). The summarized case study methodology and research questions support the achievement of the research objective, which is to explore this HCP overlap to understand its impact on EBP adherence using the TDF social domains. The research presented adds significant information to the paucity of data to inform transformational education and leadership strategies needed to support HCP EBP implementation and adherence to reduce complications and improve patient health. This chapter introduces the conceptual framework, anchored in the Theoretical Domains Framework (Cane et al., 2012), providing the principle researcher's overall perspective of the concepts found in this study. Finally, details of the operational definitions, researcher assumptions, and the scope of limitations are presented, concluding to the significance and summary of the chapter.

Problem Statement

Artificial airways and mechanical ventilation are associated with high, life-threatening risks, which can be prevented with EBP (Guthrie et al., 2018; Jannson, Hannu, Talman, Merilainen, & Kokko., 2018; Wolfensberger, Meier, Clack, Schreiber, & Hugo, 2018). EBP is not easily and readily translated into care. Tucker (2019) reports an average of 17 years between conducted EBP research and clinical implementation. Even then, rates have been reported to be staggeringly low, some at 0% (Jun et al., 2016; Nyeo et al., 2016). This gap between research and practice leaves many patients at unnecessary risk, impacting individual patients and families through loss of health and life as well as impacting the nation economically (Fischer, 2016; Jun et al., 2016).

Difficulty in implementing and adhering to EBP is not specific to the MV/T patient population. EBP implementation science is a discipline devoted to improving EBP uptake (Tucker, 2019). However, the health complexities of the MV/T population bring challenges, and high rates of complications, unique to this group. MV/T patient needs include holistic care ranging from primary bedside nursing to speech, rehabilitative, respiratory, and general and specialized medical care. The three HCP disciplines primarily providing bedside care includes nursing, respiratory therapy, and physicians. An overlap of roles, tasks, and expectations within these groups has been identified in the literature reviewed in Chapter 2 as barrier to MV/T EBP adherence (Abode et al., 2016; Guthrie et al., 2018; Klompas et al., 2013; McConnell et al., 2016; Southcott et al., 2019; Welton et al., 2016).

EBP adherence has been successfully addressed in other patient populations using a simplified behavioral framework called the Theoretical Domain Framework (Atkins et al., 2017). This framework is summarized in this chapter and detailed in Chapter 2. The TDF includes two relative domains, *social influence* and *social/professional roles and identity,* specific to the MV/T HCP overlap noted in the literature. Unfortunately, the TDF was largely unused by all but one study (Goddard et al., 2018) in the MV/T literature review in Chapter 2. However, when reviewed, the principle researcher discovered the similarities between identified MV/T EBP barriers and the TDF social domains. Findings aligning with TDF social domains follow:

- Shared duties, decision making, or role ambiguity between RN, MD, and RT (Abode et al., 2016; Guthrie et al., 2018; Klompas et al., 2013; McConnell et al., 2016; Southcott et al., 2019; Welton et al., 2016);

- Impact of peer or leader support (Klompas et al., 2014; McGrath et al., 2017; Wolfensberger et al., 2018); and;

- Feelings of HCP empowerment (Fisher & Oster, 2017; Khan et al., 2019; Mah, Staff, Fisher, & Butler, 2017).

These studies are detailed in Chapter 2 and support the need for further MV/T EBP research to explore the overlap of three primary HCP disciplines using TDF as social domains (Atkins et al., 2017; Lipworth, Taylor, & Braithwaite, 2013).

This research study examined the following problem: Various influencing factors to EBP adherence exist, placing MV/T clients at risk for preventable harms. Overlapping roles, tasks, and expectations, aligning with the TDF social domains, are noted in literature; however, not specifically framed using the TDF. The principle researcher used the research questions (RQs) and methodology to add information to this identified literature gap. RQs and methodology are summarized later in this chapter and detailed in Chapters 2 and 3.

Study Methodology

The aim was to explore one southeastern critical care hospital experience with MV/T EBP adherence; thus, a qualitative case study was used. Based on the interdisciplinary and overlapping roles described, the three selected primary HCPs disciplines include MD, RT, and RNs. The RN group includes a subgroup, unlicensed assistive personnel (UAPs). Convenience sampling included 14 HCPs for semistructured interviews using an instrument created for this study. An abbreviated, yet similar, instrument was utilized to guide a semistructured interview with the critical care manager to explore varied perspectives in the same areas of interest. Finally, the principle researcher reviewed sources of objective data, such as internal policies influencing adherence and tracking of adverse patient events related to non-adherence. Data collected were organized based on the TDF domains with a particular interest in social domains. Chapter 3 details the methodology, rationale, and methods used to analyze data.

Research Questions

  The research study addresses three RQs. Chapter 2 provides a detailed discussion of supporting literature for the RQs. Chapter 3 details the methodology for addressing each RQ. The RQs for this research study include.

- RQ1a: What EBP actions overlap between primary MV/T HCPs?

- RQ1b: What EBP expectations overlap between primary MV/T HCPs?

- RQ2: How do the HCPs perceive overlap of actions and expectations between primary MV/T HCPs impacts EBP adherence?

- RQ3: How can the TDF social domains inform the findings from primary MV/T HCPs regarding overlapping EBP actions and expectations to contribute to the growing body of knowledge to support HCP transformational change?

Research Objective

  The primary objective of this research was to explore the overlap of primary MV/T HCPs' roles, tasks, and expectations to understand its impact on EBP adherence, using the TDF domains to inform the study. The objective was achieved by addressing the three research questions using a qualitative case study methodology. The findings and conclusions of the study demonstrate the achievement of the research objective presented in Chapters 4 and 5.

Purpose of the Study

  The purpose of this study contributes information to the paucity of data in MV/T EBP adherence, specific to TDF social domains, to inform transformational education and leadership strategies needed to support HCP EBP implementation and adherence. Improving EBP adherence would reduce preventable harms and improve MV/T patient outcomes (Khan et al., 2019; Mah et al., 2017; McGrath et al., 2017; Nyeo et al., 2016; Sousa, Ferrito, & Paiva, 2019).

Implementation and adherence to EBP require HCP behavioral change (Tucker, 2019). Newly released EBP guidelines requiring changes in processes or tasks may conflict with previously held beliefs or perceptions. Thus, like any human behavioral change, altering HCP behavior to align with new guidance is complex (Atkins et al., 2017, Cane et al., 2012; Miche et al., 2005). This change can be "abrupt and radical" (Archer, 2002, p. 17), or gradual (Mezirow, 1999), but in all, the HCP must release previous understandings despite inner conflict and stress to accept new perspectives aligning with EBP to deliver safe care. Thus, change is a transformational process. The achievement of the study purpose strengthens the body of transformational education and leadership related to EBP adherence to better inform future strategies to improve adherence and, as a result, improve patient outcomes.

Conceptual Framework

A combination of nursing experience of the principle researcher, published research, and theory provided the foundation for the conceptual framework. The framework represents the transition of the MV/T patient with health needs and the resulting patient outcomes from HCP behaviors. The emphasis of the conceptual framework (center of Figure 1) is on the overlapping tasks and expectations of the three primary HCP disciplines. Barriers and facilitators impact HCP adherence with the 14 TDF domains framing EBP factors (Cane et al., 2012). An emphasis of the two social domains represent the RQs and study purpose. Figure 1 illustrates the patient care, HCP overlap, its impact on EBP, and how the TDF informs results from the presented study.
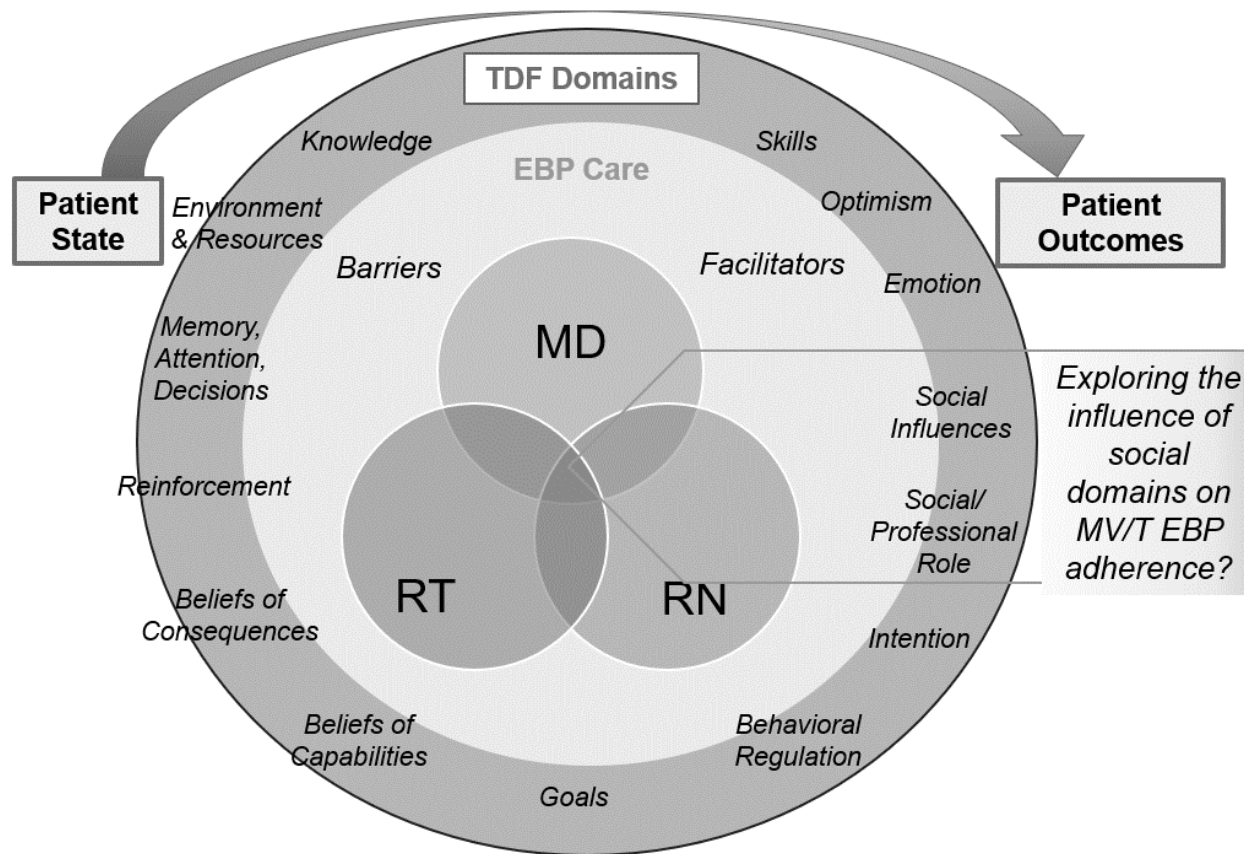
Figure 1. Conceptual Framework with the Theoretical Domains Framework adapted from Cane et al. (2012).

The principle researcher is an experienced registered nurse (RN) working in clinical and research practice with the MV/T population. Based on experience and research, the MV/T patient requires holistic needs from a multidisciplinary team of HCPs (Klompas et al., 2014). Though this specialized team is critical to delivering the quality health care necessary, the researcher experientially notes the overlap in tasks and expectations. The literature reviewed in Chapter 2 provide evidence that the principle researcher's experience is not unique and has been documented throughout the globe in numerous studies (Abode et al., 2016; Guthrie et al., 2018; Klompas et al., 2013; McConnell et al., 2016; Southcott et al., 2019; Welton et al., 2016).

Through this evidence, the principle researcher identified an emerging theme aligning with the Transtheoretical Domain Framework's (TDF) social domains (Cane et al., 2012).

The TDF was created in 2005 to provide non-behavioralists a simplified framework using social, cognitive, and behavioral domains to address behavioral change (Atkins et al., 2017; Michie et al., 2005). At first 12, then later, 14 domains were created and validated (Cane et al., 2012). In 2017, a search demonstrated over 800 articles had cited the TDF while being credited with successfully assisting other EBP implementation strategies including decreasing blood catheter infection rates (Atkins et al., 2017).

Unfortunately, only one MV/T study (Goddard et al., 2018) detailed in the literature review in Chapter 2 includes the TDF. This gap is particularly of interest as many influencing factors to EBP adherence in the MV/T population identified by these studies align with the TDF social domains. Specifically, factors such as shared duties, decision making, or role ambiguity between RN, MD, and RT were found to impact MV/T EBP (Abode et al., 2016; Guthrie et al., 2018; Klompas et al., 2013; McConnell et al., 2016; Southcott et al., 2019; Welton et al., 2016), which align with the definitions of domains, *social/professional role and identity* and *social influence* (Atkins et al., 2017).

The conceptual framework illustrates the patient transition between needing and receiving EBP MV/T care. The emphasis of this framework lies in the overlapping tasks and expectations of the HCP caregivers and the influencing factors contributing to EBP care that demonstrated to improve patient outcomes. The TDF frames this concept to focus on the two social domains, *social influence* and *social/professional role and identity*, particular to HCP overlap as noted in the literature.

Operational Definitions

The following operational definitions were followed within each RQ. RQ1a/b explored the overlap of actions and expectations between primary MV/T HCPs. The interview tool identified six commonly performed EBP-recommended tasks (Klompas et al., 2014; McConnell et al., 2016). RQ2 asked about the perception of HCPs overlapping actions and expectations impact EBP adherence. *Overlap* included how expectations from peers, leaders, professional culture, may intersect between the three primary HCP disciplines. *Adherence* represents the sustainment of behaviors aligned with EBP guidelines (Jylha, Oikarainen, Perala, & Holopainen, 2017). RQ3 frames the organization of data into the TDF social domains. The results of the study organized by RQ3 then contribute to the growing body of knowledge supporting HCP *transformational change*, representing changing of perspectives and, thus, behaviors in adults (Mezirow, 1991). The *principle researcher* and *author* are used synonymously throughout the chapters.

Throughout the paper, technical terminology is used common to the healthcare disciplines. The principle researcher explains these terms in the chapters in which the concepts first appear. Table 1 provides an extensive list of technical terminology and abbreviations used for reference. Any abbreviation used more than once in the collective chapters is addressed in Table 1.

Table 1

List of Abbreviations Found Throughout Chapters

Abbreviation	Full title or phrase
AAOHNS	American Academy of Otolaryngologists of Head and Neck Surgery
ABG	Arterial blood gas
APACHE	Acute Physiology, Age, Chronic Health Evaluation: Health severity scoring for acute patients
ATS	American Thoracic Society
BCW	Behavioral Change Wheel
BCT	Behavioral Change Techniques
CDC	Centers for Disease Control and Prevention
EBP	Evidenced-based practice
HAI	Hospital-acquired infection
HCP	Healthcare professional
HOB	Head of bed
ICU	Intensive care unit
LOS	Length of stay
MDT	Multidisciplinary team
MD	Medical doctor, or other prescribing provider
MV	Mechanical ventilation
MV/T	Describes target population of patients with an invasive, artificial airway, with or without mechanical ventilation
NM	Nurse manager
PDSA	Plan Do Study Act
RN	Registered nurse
RQ	Research question
RT	Respiratory therapist
SAT	Spontaneous awake trial
SBT	Spontaneous breathing trial
Sed Vac	Sedation vacation
SHEA	Society of Healthcare Epidemiology
ST	Speech and language pathology
TDF	Theoretical Domain Framework
TLT	Transformational leadership
TRAE	Tracheostomy related adverse event
UAP	Unlicensed assistive personnel
WHO	World Health Organization
VAE	Ventilator associate event
VAP	Ventilator associate pneumonia

Assumptions

This case study provides similar findings of overlapping tasks and expectations among the three primary HCPs noted throughout the reviewed literature in Chapter 2. Qualitative studies in the literature review revealed various barriers to EBP adherence, falling within the definitions of the TDF social domains (Craig et al., 2017; Debano et al., 2017; Goddard et al., 2018). Many quantitative and mixed-method studies also identified barriers to EBP impacting adherence rates (Abode et al., 2016; Guthrie et al., 2018; Klompas et al., 2013; McConnell et al., 2016; Southcott et al., 2019; Welton et al., 2016; Wolfensberger et al., 2018). Based on the similarities of the various mixed-types studies and the principle researcher's experience, the principle researcher expected parallel results such as various TDF domains, including significant social factor impact.

The researcher acknowledges inherent assumptions, personal biases, and positions, that may have impacted the interpretation of the results. Potential biases included a personal experience as a female nurse within the healthcare field, which predisposes the principle researcher to preconceived perspectives. Additionally, the principle researcher has a previous relationship with the chosen site of research, though this relationship is not current. Validity methods such as triangulation, bracketing, and member-checking were used to minimize potential bias (Creswell, 2011; Cutliffe & McKenna, 1999).

Limitations

The study had methodological and researcher limitations. The case study methodology was limited in its ability to collect objective data or evaluate a cause-effect relationship based on lack of intervention (Yin, 2014). Case studies are also limited in the ability to generalize results to other facilities, settings, or populations (Polit & Beck, 2004) while the researcher limitations

of the case study include the human factors of collecting and analyzing subjective data (Creswell, 2011).

However, based on the objective of the research, this case study methodology remains a valid tool to achieve the study objective. The study objective was to explore the three HCP groups as it relates to the TDF social factors influencing EBP adherence using three RQs. The case study methodology allowed the researcher to explore the experiences of participants. In this case, the semistructured interview tool presented in Chapter 2 aimed to address RQ1 and RQ2. The 10-item tool prompted participants to confirm shared EBP actions, identify overlap and perceived impact of on patients. Analysis of data using the TDF addresses RQ3. Though limited by design, the research questions and tools facilitated the research objective. Validity methods such as bracketing, member-checking, and triangulation were used to mitigate the limitations.

Scope and Delimitations

The scope of the case study was intended to understand staff experience with MV/T adherence from one facility; thus, it is limited in scope by geography, facility, and participants. The study setting was a 200-bed acute care hospital in the southeastern U.S. The study was specific to the intensive care unit (ICU). The ICU was selected based on the restriction of MV/T patients to this type of care unit. Participants included the three primary HCP groups: nurses (RN), respiratory therapy (RT), and physicians (MDs). Though a multidisciplinary team (MDT) for MV/T patients includes various healthcare team members, this presented study included only these disciplines based on their primary bedside roles who are most likely to overlap in care.

Shared geography, employer, and profession limited the variation in participant perspective. Participants likely share culture, values, or beliefs. However, based on the specialty care required for MV/T patients, other acute care units are not applicable. Based on resources

and qualitative methodology for data collection, only one facility could be included, limiting a variety of experiences that may differ between hospitals, regions, or countries. Though limited in scope, the researcher assumed findings from this study would identify some overlap, like other globally and U.S. studies identified in Chapter 2 (Abode et al., 2016; Guthrie et al., 2018; Klompas et al., 2013; McConnell et al., 2016; Southcott et al., 2019; Welton et al., 2016). This assumption was based on comparable scopes of HCP practices within the U.S and the global-reaching EBP guidelines (Klompas et al., 2014; Mitchell et al., 2014).

The study included methods to address limitations. The convenience sampling recruited participants from each shift from each HCP group. Data collected occurred over two shifts to facilitate the gathering of varied experiences within the small subgroups of participants to capture divergent perspectives from the morning and night shifts. Validation methods were utilized, such as triangulation. The principle researcher interviewed each participant of all HCP groups using the same tool. Though a lack of generalizability is a characteristic of qualitative case studies (Creswell, 2011), the methodology and limitations facilitated the achievement of the study objective. This study added information to the paucity of MV/T EBP adherence data, specific to TDF social domains, to inform transformational education and leadership required to support HCP EBP implementation and adherence, and in hopes, improve patient outcomes.

Significance of Study

Approximately one million intubations and tracheostomies are performed in the U.S. annually (Cheung & Napolitano, 2014; McConnell et al., 2016), placing each patient at risk for complications (Khan et al., 2019; Sousa et al., 2019). EBP guidelines provide HCPs with current, research-based recommendations to improve patient health through the minimization of these complications. Unfortunately, available guidance does not guarantee translation into HCP

practice (Jylha et al., 2017). Only 14% of EBP is incorporated into routine care, while the average rate of implementation is approximately 17 years (Tucker, 2019). Reported MV/T EBP adherence rates vary by study. The literature review in Chapter 2 notes EBP adherence rates as low as 0% and 3% (Nyeo et al., 2016). Even after targeted EBP adherence strategies increased adherence, within six months, one study reports another significant decline in the same EBP tasks (Nyeo et al., 2016). Though a wide range of adherence numbers are reported within studies, leading organizations in the healthcare industry like Society for Healthcare Epidemiology of America (SHEA) (Klompas et al., 2014) acknowledge EBP adherence requires more research to develop and improve strategies to improve patient health (Jansson et al., 2018; Jannson, Ala-Kokko et al., 2013; Khan et al., 2019; Timsit et al., 2017).

Individual patients, families, and the entire community endure the impact of low EBP adherence. Risks can be immediate, acute, and life-threatening, such as the most lethal and second most common hospital-acquired infection, VAP. This deadly infection can impact a range of 6-67% of all patients intubated (Timsit et al., 2017). Other preventable complications can develop over time, particularly those associated with long-term ventilation or tracheostomy use. Up to 75% of all tracheostomy patients experience at least one adverse event (Southcott et al., 2019). These debilitating complications can include vocal cord paralysis, tracheomalacia, or fistula formation, which is the creation of false passages into surrounding tissues (Morris et al., 2013). These complications bear human suffering and economic costs. VAP diagnoses can add $40,000 per patient (Timsit et al., 2017), while one study cited the estimated cost of one tracheostomy adverse event (TRAE) at $58,766 considering healthcare and lost worked days (Fisher & Oster, 2017).

Chapter 1 Summary and Transition

The literature provides evidence of an existing problem, which includes a lack of EBP adherence, placing MV/T patients at risk for preventable harms. The complex care required for MV/T patients creates a unique overlap in roles, tasks, and expectations, contributing to MV/T EBP adherence. The principle researcher identified and details an emerging theme from the literature, overlapping HCP roles aligning with the TDF social domains. The objective of the research was achieved by exploring the overlap of HCP roles, tasks, and expectations to understand its impact on MV/T EBP adherence using the TDF social domains. The overall purpose of this study was to add significant information to the paucity of data in MV/T studies, specific to the TDF social domains. Knowledge gained from this study may be used to further inform transformational education and leadership strategies needed to support HCP EBP implementation and adherence and result in increased adherence and improved patient outcomes.

Chapter 2: Literature Review

Introduction

"Life is but a breath" (Job 7:7 NIV). Though parabolic from a biblical sense, this statement is a scientific fact. Without breath, human life is not sustainable. For some, whether temporary or permanently, breathing requires medical intervention (McConnell et al., 2016). Though necessary, artificial ventilation to sustain human life bears risks (Wagner et al., 2018). Of course, modern medicine has greatly evolved since the first cases of airway maintenance was documented in Egyptian times (Hagberg, 2012). Ventilation research guiding multidisciplinary healthcare professionals to provide safe care can minimize risks is a well-studied topic in healthcare (Timsit et al., 2017). Unfortunately, the most effective care demonstrated in research, *evidence-based practice (EBP)*, is not readily translated into routine care, resulting in often preventable complications (Jun et al., 2016). EBP requires a change in healthcare provider behavior (Tucker, 2019), or a *transformation* of relearning and changing of previously held beliefs (Sims, 2015) regarding patient care. Various barriers exist to EBP (Jun et al., 2016), with social factors related to the overlapping of healthcare provider roles, noted throughout the literature. Unfortunately, this theme has not been widely studied using an organized framework. This chapter details the study topic and context, followed by the problem statement, study objective, purpose, and its significance. The remaining chapter presents the supporting literature, identifying strengths, weaknesses, and gaps within the data, concluding with the research questions (RQs) designed to inform the study.

Study topic. EBP adherence is necessary for all patient populations to reduce the rate of preventable harms (Cane et al., 2012; Miche et al., 2011). However, patients with an invasive artificial airway require complex, holistic care from a variety of healthcare professionals (Abode

17

et al., 2016; Dixon et al., 2018; Sousa et al., 2019). Collaborative discipline care, or a multidisciplinary team, can result in an overlap of roles, tasks, and expectations (Abode et al., 2016; Sousa et al., 2019). The literature reviewed in this chapter identifies this overlap as a social barrier to EBP adherence (Curtis et al., 2017; Goddard et al., 2018; McConnell et al., 2016). Thus, the study topic is limited to a patient population with artificial airways and the three primary healthcare providers, which are the physician, nurse, and respiratory therapist. Using the Theoretical Domains Framework (TDF) social domains, the principle researcher explores the role, task, and expectation overlap. The following section details the terms and context.

Context. The population includes patients with an invasive artificial airway to include the endotracheal or tracheotomy tube due to similarities in medical indication, use, and care. The endotracheal tube is inserted nasally or orally and partially extends into the trachea (Hagberg, 2012). The tracheostomy is surgically placed through the skin in the neck, around the second or third cricoid ring, and secured using sutures until the stoma site is established (Hagberg). Both devices facilitate airway patency to facilitate independent or assisted ventilation in the event a patient is unable to maintain adequate breathing patterns (Wagner et al., 2018). Endotracheal tubes are utilized temporarily to deliver *mechanical ventilation (MV)*, while a tracheostomy provides a longer-term option for either independent airway support or extended MV (McGrath et al., 2017). The phrase *mechanically ventilated and/or tracheostomy* patient, or *MV/T*, is used to refer to this population. There are no specific patient age criteria because the risk for complications spans all ages.

Both types of invasive artificial airway devices, endotracheal and tracheostomy tubes, are included in this study topic based on shared similar risk for complications. Both are portals of entry for contaminated secretions from the oropharyngeal space to travel into the sterile, lower

18

respiratory tract (D'Haese et al., 2013; Timsit et al., 2017). Contamination of these secretions in the respiratory track is associated with an increased risk of respiratory infection, most commonly, *ventilator-associated pneumonia* (*VAP*) (Klompas et al., 2014). These airway devices also place pressure on surrounding tissues and skin, increasing the risk of complications and injury which can include minor ailments like post-operative sore throat to severe skin breakdown or the creation of false tracheal passages into anatomical structures (Dixon et al., 2018; Hess & Altobelli, 2014; Shin et al., 2015; Wagner et al., 2018). Endotracheal and tracheostomy tubes also impact functions including mobility, speaking, and swallowing (Bonvento, Wallace, Lynch, Coe, & McGrath, 2017; Khan et al., 2019).

A variety of general and specialty caregivers are needed to address such holistic and widespread adverse complications. The professional healthcare team includes but is not limited to general bedside nursing, specialty nursing such as wound care, speech therapy, rehabilitative or physical therapy, respiratory therapy, and physicians (Al Sindi, Sarwani, & Sarwani, 2016). The focus of this review is limited to EBP-recommended, routine, bedside care provided by the primary caregivers. This routine, bedside care aligned with EBP includes patient mobility, patient positioning, oral care, tracheal suctioning, and interruption of sedation (Klompas et al., 2014; Mitchell et al., 2013). For the MV/T population, primary HCP groups providing this care include nurses (RNs), physicians (MDs), and respiratory therapists (RTs). Thus, this study limits the target HCP group to these three HCP disciplines.

A healthcare professional role and expectations of allowed tasks and decision-making are defined by each discipline's scope of practice (Federation of the State Medical Boards of the United States, 2005). The scopes of practice overlap for these three HCP disciplines lead to a shared responsibility and expectation EBP task completion from one another. However, shared

tasking can be a barrier to EBP task completion or *adherence* (Abode et al., 2016; McConnell et al., 2016; Southcott et al., 2019). Scopes of practice for each HCP discipline group is addressed in conjunction with the conceptual framework.

 Evidence-based practice is a broad term often used interchangeably in the literature (Jylha et al., 2017). The World Health Organization (WHO) states EBP is "conceptualized as clinical decision-making of healthcare practices . . . informed by the best available evidence" (Jylha et al., 2017, p. 2). Evidence generated by research is collected, analyzed, and synthesized to provide HCPs with recommendations for care to improve patient outcomes (Jun et al., 2016; Jylha et al., 2017). WHO cites the Joanna Briggs Institute Model for EBP, noting three components of evidence synthesis to include systematic reviews, evidence summaries, or clinical guidelines (Jylha et al., 2017). EBP then must be transferred, implemented, and sustained to benefit patients (Jylha et al., 2017). Using the Awareness-to-Adherence Model, four phases of EBP transfer includes:

- *Awareness*, consciousness of new information or guideline;

- *Agreement* with proposed information or guideline;

- *Adoption*, or decision to implement for some patients; and

- *Adherence*, continued implementation for all applicable patients (Doherty et al., 2017; Jylha et al., 2017).

 In this research study, *EBP* is considered any guideline, standardized protocol, or set of interventions, often referred to as a *bundle,* cited by the study researchers as a recommendation from a clinical guideline or recommending body. Many studies included in this literature review broadly use the term *adherence* or *compliance* when referring to the alignment of HCP behavior with EBP but are generally understood to be synonymous. Klompas et al. (2014) noted the lack

of standardized definition within the literature. As a result, this research study defines *adherence* as the adoption and/or sustainment of behaviors aligned with selected EBP synthesized evidence (Jylha et al., 2017), but includes studies that utilize the word *adherence* or *compliance*. *Implementation science* refers to the general study of the methods intended to translate EBP into practice (National Institutes of Health (NIH), 2013). This paper discusses both general EBP implementation science and MV/T EBP. *Nonspecific EBP* is used to term general EBP statements compared to MV/T EBP referring to EBP specific to the MV/T population.

Transformational education and leadership are included in the restricted context of the study purpose, which is to is to improve MV/T EBP adherence, in effort to reduce preventable harms (Khan et al., 2019; Mah et al., 2017; McGrath et al., 2017; Nyeo et al., 2016; Sousa et al., 2019). The alignment and adherence to new EBP guidelines requires HCPs to relearn previously established behaviors like prescribing practices, therapies, or procedural care (Sims, 2015; Tucker, 2019). This dynamic change of learning and relearning new perspectives aligns with transformational learning (Mezirow, 1991; Sims, 2015). This behavioral change may conflict with previously held beliefs or perspective about patient care. Conflict, either rapid or gradual, inflicts some level of disorientation and stress onto the individual during the development of new perspectives (Archer, 2002; Mezirow, 1991; Sims 2015). HCPs, though, have a responsibility to prevent harm where possible (Silva & Ludwick, 1999), thus a duty to provide EBP regardless of internal conflict. Therefore, the literature identifies transformative teaching and leadership as important methods in which to promote the value of EBP for HCP learners (Doody & Doody, 2013; Morris & Faulk, 2012).

Social factors are key during transformation learning (Christie, Cary, Robertson, & Grainger, 2015; Mezirow, 1991). Reflection of the individual's need for change or disorienting

experience is shared with others while he/she recognizes others' experience with change and as he/she experiments with new role options (Mezirow, 1991; Nohl, 2015). This dynamic of shared, social experience largely impacts new learning and outcomes (Christie et al., 2015). Thus, the exploration of social factors and its impact on the ability of HCPs to change behaviors to align with EBP is a logical pursuit. The purpose of the study, then, is to add information to the paucity of data in MV/T EBP adherence, specific to TDF social domains, to inform transformational education and leadership strategies needed to support HCP EBP implementation and adherence. Increased adherence, in turn, leads to improved patient outcomes (Khan et al., 2019; Mah et al., 2017; McGrath et al., 2017; Nyeo et al., 2016; Sousa et al., 2019).

Significance. Within the discussion of the importance of EBP, WHO states, "the burden of unsafe care is a serious global health issues and a challenge in all countries" (Jylha et al., 2017, p. 8). An estimated 100,000 deaths per year are related to preventable harms (Jun et al., 2016). In the U.S., over one trillion dollars, or approximately one-third of annual healthcare expenditure, is spent on these adverse outcomes, including hospital-acquired infections (HAI) like VAP (Fischer, 2016). The leading cause of HAI-related death is VAP, caused by aspiration of contaminated secretions during mechanical ventilation via the endotracheal or tracheostomy tube (Guthrie et al., 2018; Klompas et al., 2014; Timsit et al., 2017). Worldwide, 105 million people are intubated each year (World Health Organization, 2017). In the U.S., the number is estimated to be 790,000 patients (McConnell et al., 2016), with MV being the most common intensive or critical care unit procedure in patients greater than 65 years old (Guthrie et al., 2018). With VAP rates ranging from 5%–67% and the most vulnerable patients at greatest risk (Timsit et al., 2017), the potential benefit of increasing EBP adherence for improved patient outcomes is great.

Similarly, patients with tracheostomies, with or without MV, may have significant benefits from improved EBP adherence. Approximately, 100,000 tracheostomy procedures are performed each year in the U.S. (Bonvento et al., 2017; Cheung & Napolitano, 2014). One North American survey demonstrated that only 60–80% of all patients undergoing a tracheostomy procedure survive the hospital stay (Bonvento et al., 2017). Another study demonstrated a rate of up to 75% of all patients with a tracheostomy suffer from a tracheostomy-related adverse event (Southcott et al., 2019). Complications can include severe skin breakdown and tracheal damage such as tracheomalacia, or creation of false tracheal passages into surrounding structures (Morris, Whitmer, & McIntosh, 2014). The large numbers of tracheostomies and high rates of adverse events demonstrate the potential benefit from improved delivery of EBP quality care.

Despite EBP's demonstrated ability to improve patient outcomes, subpar EBP adoption and adherence limit its potential to prevent these preventable harms as described (Jhyla et al., 2017). One study citing adherence to nonspecific, critical care clinical practice guidelines was as low as 24% (Jun et al., 2016). Adherence rates for MV/P EBP vastly range in the literature (Jansson et al., 2018). This literature search identified a range of 0% (Nyeo et al., 2016) to 99.7% (Sousa et al., 2019). However, it is generally accepted in the research by evidence of preventable cases of complications (Wolfensberger et al., 2018), including acknowledgement from the Society for Healthcare Epidemiology of America (SHEA) (Klompas et al., 2014), that MV/T EBP adherence requires more research and strategies for improvement (Jansson et al., 2018; Jannson, Ala-Kokko et al., 2013; Khan et al., 2019; Timsit et al., 2017).

Through the exploration of social factors contributing to MV/T EBP, this study adds information to the TRL body of knowledge. The successful implementation and sustainment of EBP within healthcare systems have been linked with TRL due to a "change-oriented

23

environment suited to support new ideas and innovation" (Gallagher-Ford, 2014, p. 141). Hence, the information gained from this research activity, identifying social factors impacting the adherence of HCP behavioral change to sustain EBP related activities, may assist transformational leaders in better encouraging the adoption of new EBP behaviors.

Problem statement. MV/T patients are at high risk for life threatening complications, many of which may be preventable (Guthrie et al., 2018; Wolfensberger et al., 2018). However, a lack of adherence to recommended EBP by HCPs decreases the quality of care (Jannson et al., 2018). A simplified behavioral framework, TDF, has been successfully used in many EBP implementation efforts such as error-free prescribing and safe use of nasogastric tubes (Atkins et al., 2017). Though only one MV/T research study utilized the TDF, it identified priority influencing factors relating to the two social domains, *social influence* and *social/professional roles and identity* (Goddard et al., 2018). These social influences may be key due to multidisciplinary emphasis on the MV/T population, particularly from to the overlapping roles, duties, and expectations of the primary MV/T HCPs (Abode et al., 2016; McConnell et al., 2016; Southcott et al., 2019). Other studies exploring MV/T EBP adherence did not use the TDF but noted factors influencing EBP that may align with TDF social domains like:

- Shared duties, decision making, or role ambiguity between RN, MD, and RT (Abode et al., 2016; Guthrie et al., 2018; Klompas et al., 2013; McConnell et al., 2016; Southcott et al., 2019; Welton et al., 2016);

- Impact of peer or leader support (Klompas et al., 2014; McGrath et al., 2017; Wolfensberger et al., 2018), and;

- Feelings of HCP empowerment (Khan et al., 2019; Mah et al., 2017; Fisher & Oster, 2017).

The problem statement for this study is: Various influencing factors to EBP adherence exist, placing MV/T patients at risk for preventable harms. Overlapping roles, tasks, and expectations, aligning with the TDF social domains, are noted literature; however, not specifically framed using the TDF.

      Organization. This literature review is organized to provide background and evidence supporting the study topic and identified problem. Starting with the conceptual framework, TDF will be introduced, outlining its beginning in general EBP implementation science. After identifying the emerging themes of social domains within the literature, a new conceptual framework is proposed, based on the TDF, to explore barriers and facilitators within the social influences and social/professional role domains. Next, a review of the research outlines current evidence on four primary concepts reviewed in this literature. These topics include:

- Current research contributing to MV/T EBP;

- MV/T EBP adherence;

- Review of nonspecific EBP implementation science; and

- Emerging theme of social domain influences on adherence in MV/T EBP.

Next, this chapter details the same research literature by methodological design and discusses collective and unique advantages and disadvantages. The researcher then presents a synthesis and critique of previous literature organized by the previously outlined four primary concepts. The chapter concludes with a summary of the findings and analysis to support the topic and identified problem statement.

Conceptual Framework

      A combination of research, practice experience of the principle researcher, and theory provides the foundation for the conceptual framework. The framework demonstrates the patient

transition from needing MV/T care to the receipt of care, resulting in desired outcomes. The center of the diagram (see Figure 1) emphasizes the care received by the primary HCP disciplines of the RN, RT, and MD. Illustratively, EBP care is surrounded by barriers and facilitators, then framed by the 14 TDF domains, adapted from Cane et al. (2012), impacting EBP delivery. HCP roles overlap visually, showing convergence between the three groups. An emphasizing arrow highlights how the two social TDF domains impact this HCP convergence and overlap. Figure 1 located in Chapter 1 provides a visual reference for the conceptual framework. This conceptual framework discussion includes a detailed review of the primary HCP roles from both the principle researcher's experience and literature review, a contextual review of the TDF, and finally, an expanded discussion of the two TDF social domains and importance to this study topic.

Primary HCPs and roles. The center of the conceptual framework (see Figure 1) lists three primary HCP providers. This section provides an overall review of the MV/T multidisciplinary team with an emphasis on the three primary HCP roles. The personal experience of the principle researcher working within the acute care setting for 15 years has been leveraged, in addition to theory and research, and is described in the following section.

A multidisciplinary health professional team is recommended to address the wide range of potential MV/T complications and risks (Klompas et al., 2014; Mitchell et al., 2013). This team frequently includes varied specialty physicians (MD), respiratory therapists (RT), rehabilitation providers to include speech therapy (ST), physical/occupational therapists (PT/OT), infection control specialists, and a wide variety of nursing professional such as the staff nurses (RN) and specialty nurses like wound-care nurses, and nurse practitioners (Abode et al., 2016; Dixon et al., 2018; Khan et al., 2019; McConnell et al., 2016). Unlicensed assistive

personnel (UAP) also provide key technical care and support to the MV/T patient, which may further overlap tasks (Goddard et al., 2018; Guthrie et al., 2018). Despite this wide range medical professional, the conceptual framework created for this study focuses on the three primary HCPs: MD, RT, and RN. These three disciplines were chosen due to their primary role and responsibilities for patient care (Klompas et al., 2014).

The nurse role must be further clarified. Many types of nurses vary in educational degrees, licensure, certification, leadership role, or clinical specialization (American Nurse Association, 2019). Even within these descriptors, overlapping may occur. For this conceptual framework, the designation of RN encompasses the bedside, primary care nurse, typically with a Registered Nurse license. Each state board of nurses governs the scope of practice and may vary slightly but generally include similar tasks and responsibilities throughout the U.S. (REDACTED Department of Health Professions, 2019). Licensed practical nurses (LPNs) were not excluded for studies occurring in settings that are more likely to have LPNs at the bedside, such as skilled nursing facilities (Guthrie et al., 2018). Many studies included in the literature occurred outside the U.S. The term *RN* refers to the primary nurse provider, despite the varied certifications or titles specific to individual countries.

Similar to the term *nurse*, there are varied prescribing provider types that include medical doctors, doctors of osteopathy, and mid-level providers such as advanced practice nurses or physician assistants. This study refers to these prescribers and providers as *MDs*. MDs have a key role in the MV/T care. Though MDs are often unable to be consistently at the bedside, he/she is viewed as the leader of the care team, with prescribing authority to authorize the initiation and/or cessation of medications and treatments, often outside the RN or RT scope of

27

practice. In the standardized care of the MV/T patient, the MD can often transfer authority through the creation of protocols if patient conditions are met.

The RT within this conceptual framework represents the respiratory therapists. Based on the setting of the study, the RT provider may be referred to as a physiologist or therapist. The RT is a specialized HCP for respiratory care. This often visits patients throughout the hospital or facility, unlike nurses who are typically assigned to one specific unit. However, due to the expertise needed in caring for the MV/T client, the RT is a primary care provider. RTts maintain ventilatory settings often beyond the expertise of the RN. A shared role in patient respiratory care often overlaps between the RN and the RT including assessment, suctioning, oxygen delivery, care of the device, and positioning.

Current EBP emphasizes the importance of such collaboration between HCPs to deliver quality care for optimal patient health outcomes and is supported by recommending organizations such as Society of Healthcare Epidemiology (SHEA) and American Academy of Otolaryngologists of Head and Neck Surgery (AAOHNS) (Klompas et al., 2014; Mitchell et al., 2013). Many recommendations include tasks that may overlap between HCP roles. Tasks include oral care, patient positioning, care of the medical devices such as cleaning of the tracheostomy or cuff management, and executing weaning protocols involving spontaneous breathing trials (SBT) or the withholding of sedation (Guthrie et al., 2018; Khan et al., 2019; Nyeo et al., 2016). Furthermore, tasks within the nursing group of RNs and unlicensed assistive personnel (UAPs) can further confuse responsibility. This lack of clarity among HCP roles or expectations may lead to lapses in care (Goddard et al., 2018), preventing the implementation of EBP demonstrated to improve patient outcomes.

Using TDF to frame EBP implementation. The next ring of the conceptual framework in Figure 1 demonstrates the 14 domains of the TDF (Cane et al., 2012). This framework was chosen because the implementation and adherence of EBP require HCPs to alter previous behaviors to align with recommendations and is referred to as implementation science (Cane et al., 2012). Behavioral theories have been recognized as important to address complex behaviors and impacting factors, but over 80 behavioral theories exist (Atkins et al., 2017). Despite numerous behavioral theories, quality research in adherence is limited. Behavioral theories are complex for researchers who do not specialize in behavioral sciences (Michie et al., 2005; Phillips et al., 2015). Further inhibiting HCP-specific behavioral studies, theories often overlap (Atkins et al., 2017) or lack of validation or justification for single theory use (Atkins et al., 2017; Cane et al., 2012).

The TDF was created in 2005, specifically to address EBP implementation using a simplified framework using social, cognitive, and behavioral domains (Atkins et al., 2017; Michie et al., 2005). A multi-disciplinary group of psychologists and HCPs created this framework (Cane et al., 2012), identifying 128 constructs and 33 theories as primary constructs impacting behavioral change (Atkins et al., 2017; Cane et al., 2012). The group concluded with 12 domains (Atkins et al., 2017) complete with "exemplar questions" for qualitative interviews in research (Cane et al., 2012, p. 2). In 2012, validation exercises were completed finding similar results to the original list, adding two additional domains totaling 14 domains in its most current form (Atkins et al., 2017). Most recently, TDF has been extended to inform behavioral health changes in patients or the general population (Atkins et al., 2017; Cane et al., 2012) and has been cited in over 800 studies (Atkins et al., 2017).

TDF is a key framework used in numerous and previously successful implementation strategies in the HCP population and beyond (Atkins et al., 2017; Cane et al., 2012). The framework allows a simplified lens to investigate factors related to EBP implementation (Michie et al., 2005). Unlike many behavioral theories, TDF demonstrates validity through revised validation processes (Cane et al., 2012) and repeated use (Atkins et al., 2017). Of relevance to this study, the TDF includes two social domains, *social/professional role and identity* and *social influences*. These domains are defined by Lipworth et al. (2013) as:

- *Social/ professional role and identity*: A person's behaviors and qualities in the work setting

- *Social influences*: Interpersonal interactions impacting one's change of thoughts, feelings or behaviors (pp. 5–9)

This chapter provides a detailed discussion of these domains and their importance and applicability to this research study topic.

Emphasis on social domains in MV/T EBP adherence. Lipworth et al. (2013) define *social/professional role and identify* as the "extent one believes that a particular behavior aligns with their social/professional identity" (p. 7). As the recommended behavior is perceived to be within the role of the professional, this domain is seen as a facilitator (Lipworth et al., 2013). However, if boundaries are not clearly defined, or if boundaries overlap, *social/professional role and identify* can be a barrier (Atkins et al., 2013; Lipworth et al., 2013). Organization or professional culture also presents influences within this domain (Lipworth et al., 2013). One study noted that senior nurses should be given the better equipment, therefore *social/professional role and identify* was a barrier for junior nurses to execute the task requiring corresponding equipment (Debano et al., 2017).

Social influences are "interpersonal processes that can cause individuals to change their thoughts, feelings, or behaviors" (Lipworth et al., 2013, p. 7). Influencing factors within this domain include social or group norms, social support, and role modeling (Atkins et al., 2017). Facilitators may be positive leadership within the organization or even the use of peer-to-peer modeling or *champions of EBP* (Cane et al., 2012). Whereas barriers would include the perception that leadership was not supportive or accountable for EBP changes (Lipworth et al., 2013).

Finally, focusing on the emphasis arrow in Figure 1, the importance of these social domains to the MV/T EBP is explored. Many EBP behaviors, decisions, and tasks overlap within the primary caregivers: MD, RT, and RN. The *social/professional role and identity* and s*ocial influence* domains of the TDF outline how such overlapping roles and expectations, coupled with influencing factors such as culture, support, and threat to authority, can impact EBP behavioral change and adherence (Atkins et al., 2017; Cane et al., 2012; Lipworth et al., 2013). Based on this understanding of the MV/T population and the roles of the primary HCPs, the TDF serves as the framework to explore how these factors may influence EBP adherence in this population.

Review of Research Literature and Methodological Literature

Ample research demonstrates the effectiveness of EBP in the MV/T patient population (Klompas et al., 2014; Mitchell et al., 2013); however, the full impact relies on HCP sustained behavioral change (Jyhla et al., 2017; Khan et al., 2019). This literature review addresses a collective body of evidence organized into the following four themes:

1. Supporting literature demonstrating EBP effectiveness in MV/T population;

2. State of adherence to MV/T EBP;

3. Current knowledge of nonspecific EBP implementation in healthcare; and

4. The emerging theme of EBP influencing factors within TDF social domains.

Current MV/T EBP. Due to the significance and impact of complications in the MV/T population, much research has been conducted to determine EBP to improve patient health outcomes. This research is then analyzed and synthesized by leading health organizations or groups to form clinical practice guidelines with the intent that healthcare facilities and HCPs will adopt and adhere to the recommended practices (Jun et al., 2016; Jylha et al., 2017). Organizations with MV/T EBP clinical practice guidelines or recommendations include the Centers for Disease Control and Prevention (CDC), Society for Healthcare Epidemiology of America (SHEA), and American Academy of Otolaryngologists of Head and Neck Surgery (AAOHNS) (Klompas et al., 2014; Mitchell et al., 2013). These guidelines are reviewed first. Next, this chapter will examine current research utilizing various EBP practices to determine the impact on patient outcomes. Outcomes can include general or specific system outcomes. General outcomes include mortality, length of stay (LOS), length of treatment, and referral for ancillary services like rehabilitation therapies and/or speech-language therapy (SLT). Specific outcomes include skin health or presence of ventilator associated events/infection, such a VAP.

MV/T EBP guidelines. Klompas et al. (2014) presented a summary of published guidelines or recommendations from various guidelines to provide a "concise format to assist acute care hospitals in implementing and prioritizing strategies to prevent ventilator associated pneumonia" (p. 133). This SHEA sponsored review was a collaborative work of the following organizations: Infectious Diseases Society of America (IDSA), the American Hospital Association (AHA), the Association for Professionals in Infection Control and Epidemiology (APIC), and The Joint Commission (TJC) (Klompas et al., 2014). The review utilized the CDC surveillance definition for ventilator associated events, conditions, and pneumonia. Though

varied types of ventilator conditions and infections are reviewed per CDC definitions, VAP is primarily addressed in the review as a preventable outcome. Klompas et al. (2014) reported a varied rate of VAP between 10-20% of all MV patients depending on patient sub-populations and co-concurrent conditions. Klompas et al. (2014) noted differing diagnostic criteria as a barrier to accurate surveillance of VAP. Recommendations for prevention were made based on the quality of evidence and the potential for the intervention to cause harm (Klompas et al., 2014). The SHEA guideline stressed the importance of the *multidisciplinary team (MDT)*. Klompas et al. (2014) emphasized MDT to include, at a minimum, the MD, RN, and RT, to lead care and monitor progress. Multiple EBP interventions for intubated patients were included but not limited to the minimization of sedation, mobility, minimization of pooling secretions, and elevation of head of bed (HOB). Klompas et al. (2014) also noted the prevention "bundle" (p. 144), as a set of interventions aimed to decrease VAP rates. Klompas et al. (2014) cited the variety of implementation, the heterogeneity of studies, the sub-sets of populations, and the pre- and post-methodologies that limit the clear determinacy of the superior set. However, the researchers stated, bundles have demonstrated effectiveness while they offer a set of HCP expectations that may demonstrate a "synergistic" (p. 144) effect. Education, peer-to-peer modeling, and reminders were also noted to impact the uptake of recommended uptake of EBP interventions (Klompas et al., 2014).

Representing the AAOHNS, Mitchell et al. (2013) presented the findings from a meta-analysis and consensus panel of experts as recommendations for care for the patient with a tracheostomy. Mitchell et al. (2013) noted an increase in the placement of tracheostomies, and due to the existence of contradicting information, the AAOHNS desired to offer clear recommendations for care. Using a systematic review, consensus panel, and qualitative survey,

the researchers presented many consensus statements. Statements included the need for an MDT, education for staff and caregivers, and recommendations on device type and care. Mitchell et al. (2013) concluded the need for further research regarding surveillance and factors contributing to complications.

Overall, recommending organizations represent the mechanically ventilated patient using either the endotracheal or tracheostomy tube (Klompas et al., 2014), or the patient with a tracheostomy tube with or without MV (Mitchell et al., 2014). Together, these studies (Klompas et al, 2014; Mitchell et al., 2013) represent major hospital facilities and healthcare regulatory agencies across the U.S. Using systematic searches and analysis procedures, the two articles above presented clear recommendations for practice using EBP. Recommendations varied from patient specific tasks like oral care or sedation minimization (Klompas et al., 2014) to organizational interventions like the use of HCP peer to peer role modeling and creation of MDT (Klompas et al., 2014; Mitchell et al., 2013). As noted by Klompas et al. (2014), these EBP have been demonstrated effective; however, generalizability may be limited due to the heterogeneity of varied sub-populations among the MV/T patients and natural limitations of the research environment. Thus, individual studies have chosen to adopt MV/T EBP strategies and evaluate effectiveness. The following studies are organized based on general or system specific patient outcomes.

General tracheostomy patient outcomes. McGrath et al. (2016) conducted a study in four institutions in Manchester, England. The researchers used an intervention approach that aligned with the Global Tracheostomy Collaboration (GTC), a multinational organization providing multidisciplinary EBP guidance to HCP to improve the care of the tracheotomy patient. McGrath et al. (2016) utilized the Global Tracheostomy Collaboration (GTC) database and guidance

resources to implement three major EBP interventions: a) staff education; b) early speech-language referrals and staff feedback; and c) creation of MDT to standardize care and ensure proper staff resources. Over a 12-month data collection period using a pre- and post-intervention design, 296 patients with tracheostomies were included. Researchers found a significant downward trending of patient harm severity by month ($p < .01$). Other varied outcomes showed improvement, including decreased length of stay (LOS), increased speech-language referral, speaking valve use, and cuff deflation. This study was a quality improvement project using the Plan-Do-Study-Act (PDSA) (McGrath et al., 2016); thus, the feedback was provided to the participants during the study regarding progress (McGrath et al., 2016). Researchers contributed this feedback as a key component to the improved outcomes.

McKeon et al. (2018) found improved tracheostomy patient outcomes when evaluating the impact of an MDT in a Boston pediatric hospital. Like the facilities from McGrath et al. (2017), the Boston facility aligned with the GTC to develop the team. This team met monthly to review barriers to care, tracheostomy complication rates, continuous improvement activities, and EBP research related to the team (McKeon et al., 2018). After a series of "catastrophic tracheostomy related adverse events (TRAEs)" (p. 2420), the MDT created a standardized surveillance system for monitoring TRAEs. In addition to the surveillance system, all reports of harm underwent an immediate review of necessary individuals and then a monthly review by the team to determine the action needed. McKeon et al. (2018) reported the sample size by an average of 492 inpatients with tracheostomy daily (ITD) per month based on an average of 17 tracheostomy in-patient per day. Researchers reported an average of 5.75 TRAE per 1,000 ITD, with most in the ICU (71.7%), before the surveillance and feedback approach. From the time of the intervention, a reduction of preventable TRAE was noted with an increase in non-preventable

TRAE. During the study period, only one TRAE caused serious harm, with none being catastrophic. From the first to last halves of the surveillance intervention and feedback, there was a 24.5% decrease in minor events, while an 11% increase in moderate events, though only occurring at a rate of 1.3 per 1,000 ITDs. McKeon et al. (2018) concluded accurately tracking adverse events facilitated a decrease in preventable adverse events and complications, suggesting an increase in quality care. The researchers noted the importance of surveillance to the already established team-implemented care of education and intervention bundles.

In Melbourne, Australia, researchers highlighted the importance of MDT-led EBP interventions based on a quantitative study, including tracheostomy patients (Southcott et al., 2019). Outcomes of interest included the tracheostomy timing, LOS, length of ICU stay, frequency of speaking valve use, and TRAEs. Interventions included twice weekly ward rounds with the team, which consisted of RN, RT, and ST to discuss and make decisions on readiness for speaking valves (PMV), weaning, and cuff deflations. Researchers noted education was provided as needed during these rounds. Staff confidence and knowledge were also measured (Southcott et al., 2019). Using a quantitative chart review and staff survey distributed to all acute wards and the critical care wards, 65 patients (39 pre-intervention, 26 post-intervention) were included. Southcott et al. (2019) reported a significant increase in staff knowledge of tracheal suctioning ($p < .05$) but no significant improvement in staff confidence in the use of humidification, nebulization, or stoma care. No significant impact was noted for patient outcomes except an increased use of speaking valves ($p = .01$). The researcher stated the staff survey demonstrated a preference for the multidisciplinary team compared to no team. Southcott et al. (2019) concluded the team offered staff support, but the lack of impact on patient outcomes may be confounded by other factors such as previously initiated tracheostomy protocols and

education. Southcott et al. (2019) noted further impact might have occurred if other AAOHNS recommendations had been implemented. The researchers recommended further research to understand factors that influence tracheostomy patient outcomes.

The EBP recommended MDT was identified as a potential solution to the "disorganized" tracheostomy care across healthcare disciplines causing poor patient outcomes in a large tertiary facility in North Carolina (Abode et al., 2016, p. 1). Adobe et al. (2016) explored implementing an MDT with weekly care conferences, EBP guided practice protocols with checklists, and American Thoracic Society (ATS) recommended surveillance. Length of stay (LOS) was the primary outcome of the study (Abode et al., 2016). This study included 173 existing pediatric patients with a median of 172 new tracheostomy patients added each year between 2007 and 2013. Researchers reported a declined LOS with weekly provider conferences increased from 39 in 2007 to 47 in 2013. Successful *decannulation*, the restoration of nose and mouth breathing without the tracheostomy, using the guideline was 71% compared to 59% of successful attempts when the guideline was not used (Abode et al., 2016). The researchers concluded the MDT-led interventions were successful in achieving improved patient outcomes.

A similar study in Ontario, Canada, determined the impact of intensivist-led MDT on tracheostomy outcomes (Welton et al., 2016). The MDT created preprinted orders, including EBP protocols. The researchers emphasized these protocols allowed for autonomous intervention without physician order for cuff deflation, downsizing, corking, and decannulation. Staff perception of the MDT impact was also measured. Welton et al. (2016) included 44 patients over the six months of data collection. Researchers compared 20 baseline patients to 24 post-intervention patients showing statistically significant improvement in time for referral ($p = .01$), first tube change ($p = .01$), and decreased MV duration ($p = .03$). Researchers found

decannulation rates improved but were not statistically significant ($p = .62$). A survey of staff showed 86% of staff felt the MDT was beneficial while 100% of the MDT felt the MDT-led activities were beneficial (Welton et al., 2016). Though improvement in some outcomes, the researchers found not all endpoints demonstrated statistical significance. Welton et al. (2016) concluded low compliance might have impacted the lack of statistically significant improvement in decannulation rates.

In an outpatient setting near Denver, Colorado, researchers formed an MDT-led EBP bundle of interventions including staff education, standardization of processes, and charting revisions (Fisher & Oster, 2017). The researcher used a quality improvement design with multiple time intervals to test the impact of the interventions (Fisher & Oster, 2017). Patient outcomes and adherence to charting care were recorded as primary outcomes. Researchers implemented EBP interventions, then measured outcomes. Fisher and Oster (2017) explained data were examined and used to guide changes, including modifications aimed to address culture change, clinician behavior, and staff needs. Fisher and Oster (2017) collected data at the second point of time. Two surveys were administered to explore comfort level and clinician ability to identify a patient in distress (survey two). Researchers reported from time intervals one to two, an increase of 39% was noted in nursing assessment charting and lowered occurrences of adverse events, though no low numbers did not allow statistical examination. The study was deemed as cost-effective based on the $18,890 cost study compare to the cited potential cost of $58,766 for a single TRAE (Fisher & Oster, 2017). The researchers acknowledged the need for more studies conducted in the outpatient setting.

Specific outcomes. Some researchers targeted specific outcomes rather than general health indicators (Dixon et al., 2018; McEvoy et al., 2017). These studies included outcomes

such as skin health surrounding the tracheostomy site or the incidence of VAP. Though a

narrower focus on outcomes of interest, the same MDT-led EBP is noted to be a primary

intervention in the care of the MV/T patient.

The role of the standardized MDT EBP has been well-established in the skin care of

patients with tracheostomies (Dixon et al., 2018; McEvoy et al., 2017). Multiple external and

patient-related factors impact skin health around the tracheostomy site (Dixon et al., 2018).

External factors include moisture from the respiratory secretions, consistent pressure from the

tracheostomy, and friction from manipulation (Dixon et al., 2018; McEvoy et al., 2017). Patient-

related risk factors include immunocompromise, lack of proper nutrition, and anatomy

abnormalities (Dixon et al., 2018). MDs, RN, RTs, specialty wound nurses, and infection control

specialists, may all be directly involved in the care at-risk patient (McEvoy et al., 2017). Two

research studies reviewed the impact of standardized MDT-led EBP on skin health (Dixon et al.,

2018; McEvoy et al., 2017).

Pressure ulcers related to tracheostomy devices are preventable (McEvoy et al., 2017).

Stage 3 or 4, or advanced pressure injuries, are on the National Quality Forum "Never Events"

due to the serious yet preventable nature of the adverse outcome (p. 236). These occurrences of

advanced pressure injuries can impact hospital reimbursement. McEvoy et al. (2017) studied

how an MDT-led EBP protocol impacted advanced pressure injuries in one large Columbus,

Ohio, pediatric hospital. The standardized and multidisciplinary approach included a team of a

senior physician, wound care specialist, RT, and RN, performing daily dressing changes with

skin assessment. Data was collected using a quantitative, pre- and post-intervention design

(McEvoy et al., 2017). A baseline of 161 pre-intervention tracheostomy placements were

reviewed and compared to 121 patients. In total, researchers found only 9.9% compared to 22%

of patients experienced wounds after the multidisciplinary team intervention ($p = .0064$). No patients had a 3 or 4 graded ulcer in the post intervention group ($p = .0014$). McEvoy et al. (2017) concluded that standardized MDT EBP interventions facilitated the full, daily assessment of the child's skin, increased provider communication, and improved rates of tracheostomy related pressure ulcers.

Dixon et al. (2018) detailed a similar quantitative study using a comparative, pre- and post-design to evaluate the impact of MDT EBP interventions on pressure injuries around the stoma site. Two large hospitals in Delaware and Maryland created an MDT of specialized professionals including RNs, RTs, surgical, wound ostomy nurses, and other institutional leaders, to assist in identifying issues leading to increased pressure ulcers in the facilities. Based on an in-depth review of specific patient factors and issues felt as contributing to the increased pressure ulcers, six EBP interventions were identified as a bundle of care for interventional action (Dixon et al., 2018). EBP interventions included a clear and flexible flange, standardizing suturing and timing of suture removal, placement of hydrocolloidal dressing, eight-hour skin assessments, and neutral positioning impact on pressure wounds. Researchers found a decrease from 10 to two pressure ulcers during the data collection time frame. However, it is unclear how many total tracheostomy patients were included in the groups. Average time to suture decreased, and no unplanned decannulations occurred during the study (Dixon et al., 2018). Dixon et al. (2018) concluded that standardization of EBP positively impacted outcomes.

VAP primarily results from the microaspiration of colonized oropharyngeal flora breaching the normally sterile lower respiratory track by way of either the endotracheal or tracheostomy tube (Timsit et al., 2017). Not only is VAP the most threatening, hospital-acquired infection, but it is believed to cause an approximate seven-day increased LOS and an additional

average healthcare cost of $40,000 (Timsit et al., 2017). Like other patient outcomes linked to the MV/T population, research demonstrates a positive impact of EBP on VAP rates (Khan et al., 2019; Klompas et al., 2013).

Timsit et al. (2017) published an empirical review of the current status of VAP. In the early 2000s, VAP was one diagnosis with a range of diagnostic criterion. Now, the concept of VAP has expanded to include a variety of ventilator complications like ventilator associated complications (IVACs), ventilator associated events (VAEs), and ventilator associated tracheobronchitis (VAT) (Timsit et al., 2017). This widened definition assisted in capturing multiple types of ventilator events including early- and late-onset, or cases of respiratory infection that may or may not demonstrate various criteria such as radiological or laboratory results (Timsit et al., 2017). More specific risk factors, identification, and treatment have made significant progress in surveillance, but compliance with EBP guidelines and protocols is lacking and must be addressed for continued success. Using North American and European guidelines, Timsit et al. (2017) identified the primary risk factors of VAP to be mechanical ventilation through the artificial airway and patient related risk factors such as preexisting conditions, comorbidities, or compromise. The researchers emphasized VAP rates can be decreased using bundled care; however, large meta-analyses were unable to "demonstrate sustained effect" (Timsit et al., 2017, p. 5). Timsit et al. (2017) acknowledged this finding aligned with little improvement in VAP rates over the past decade. A lack of a superior bundle may be a result of the complex variation of patient characteristics and varied definitions of VAP noting lack of adherence as another key factor (Timsit et al., 2017). Timsit et al. highlighted education and behavioral strategies to assist in the change needed to implement and sustain bundle care

compliance. The article concluded more effort is needed to understand the barriers to implementing and sustaining the interventions known to prevent VAP.

Khan et al. (2019) also acknowledged lagging progress in the MV/T population regarding VAP and overall patient outcomes. Using a large quantitative quality improvement study of 1,231 MV patients, a program was created using standardized EBP to improve patient outcomes. Researchers placed the focus on turning interventions into changed behaviors by "valuing frontline staff and empowering frontline staff to be actively involved in safety improvements" (Khan et al., 2019, p. 52). A previous VAP reducing program in 2003 demonstrated a reduction in VAP from 1.0 to 0 per 1,000 ventilator days; however, ICU LOS and mortality rates increased from 28% to 36%.

Khan et al. (2019) concluded this demonstrated more work needed to be completed to impact overall patient outcomes. This study reviewed a new EBP on patient outcomes while collecting data on adherence in a large acute care facility in Riyadh, Saudi Arabia, over a period of 12 months (Khan et al., 2019). The MDT-led EBP interventions included endotracheal subglottic suction, elevated HOB above 30 degrees, sedation vacation and minimization, spontaneous breathing trials, delirium assessment, and earlier increased physical mobility. The researchers found the overall mortality rate dropped significantly from 28.7% to 13.3% ($p = .0001$). The length of ICU stays also decreased significantly ($p = .45$) from 32.8 to 19.1%. VAE mortality decreased but not significantly ($p = .37$). Overall, EBP adherence was reported at 82.8%, with PT and mobility recognized as suboptimal (Khan et al., 2019). Researchers concluded VAP is not always an indicator of broader patient outcomes based on a previous study in this same institution. Broader VAE definitions allowed for more impact on patient health indicators noted in the results (Khan et al., 2019). The researchers also noted that low

compliance rates may indicate a need for altered design to the protocol or could demonstrate difficulty in translating EBP into changed behaviors.

Sousa et al. (2019) utilized a quantitative approach to understand the impact of an MDT EBP bundle on VAP rates, LOS, and mortality. Over 2 years, 828 patients were enrolled in the study. Infection Control Commission audits assessed compliance rates (Sousa et al., 2019). Overall compliance for all interventions was listed at 88%. A significant reduction in outcomes of MV duration, ICU LOS, mortality rate, and VAP rates in two ICUs occurred. Researchers concluded a high compliance rate and a low rate of VAP in the baseline group might have contributed to the lack of significant finding on VAP rates across all ICUs

Lack of adherence to MV/T EBP. Unfortunately, a lack of adherence minimizes the impact of EBP guidelines for the MV/T population, or results are unsustainable due to a lack of adherence (Fisher & Oster, 2017; Khan, 2018; Timsit et al., 2017; Welton et al., 2016). As a result, several researchers have specifically targeted adherence as a primary research outcome, attempting to understand facilitators and barriers to improve compliance (Jansson, Ala-Kokko et al. 2013; Jannson, Kaariainen et al., 2013; Guthrie et al., 2018; Nyeo et al., 2016). The following studies were included due to objectives relating to MV/T EBP adherence.

Knowledge deficits may pose a significant barrier to EBP compliance in the MV/T patient (Jannson, Kaariainen et al., 2013). Jannson, Kaariainen et al. (2013) completed a review of the literature to evaluate current literature on the impact of educational interventions on EBP adherence, with a separate focus on studies related to ventilator bundled care. This systematic review inclusion criteria consisted of the critical care nurse population, educational interventions, and clinical outcomes with an interventional design (Jannson, Kaariainen et al., 2013). The researchers included eight studies. All included a combined educational and other interventional

strategies to impact outcomes (Jannson, Kaariainen et al., 2013). This review found that seven of

the eight studies demonstrated EBP adherence had an impact on VAP rates. Other findings noted

educational programs impacted knowledge and other EBP MV/T behaviors such as hand hygiene

practices, oral care, and rates of increasing HOB Researchers also found barriers to adherence

included nurse fear of the impact on the patient, such as patient discomfort. Jannson, Kaariainen

et al. (2013) concluded the single impact of education is difficult to determine as all studies were

combined with other interventions; though, it seemed education combined with other

interventions demonstrated significant improvement on patient outcomes.

Nyeo et al. (2016) also explored the impact of education on EBP adherence in a

Singapore coronary care unit. Education was one phase of a three-phase project. The three

sequential phases included: (a) creation of RN-led VAP team to create EBP protocols, (b) staff

education, and (c) reevaluation after implementation. Nyeo et al. (2016) reported varied

compliance rates at baseline. The lowest compliance rates at 0 and 3% were the tasks of sedation

awakening trials (SAT) and spontaneous breathing trials (SBT). The highest adhered to task was

using chlorhexidine as oral care with a rate of 84%. All interventions increased after

implementation with a subsequent decline at the 6-month sustainment audit (Nyeo et al., 2016).

Researchers described faulty or inadequate equipment or lack of clarity or knowledge of SAT

and SBT guidelines as barriers. Education services and maintenance for equipment was initiated

with a subsequent increase in adherence at the 12-month mark (Nyeo et al., 2016). VAP

reportedly fell over this timeframe by 64%. The researchers concluded that the creation of

guidelines, staff education, and availability of equipment contributed to increased adherence

rates over time, thus impacting VAP rates.

Jansson, Ala-Kokko et al. (2013) also explored knowledge along with attitudes or beliefs, on adherence rates in a large Finnish hospital using convenience sampling of general ICU staff nurses and nursing assistants. Researchers described two surveys that evaluated knowledge, adherence barriers, and self-reported adherence behaviors with one open-ended item. Jansson, Ala-Kokko et al. (2013) reported a response rate of 56.4% of 101 nurses and 100% of eight nursing assistants. Increased knowledge was noted with nurses of 5 years of experience or more compared to those with less than 5 years ($p = .029$) (Jansson, Ala-Kokko et al., 2013). Assistants also demonstrated less knowledge than nurses but not significantly ($p = .191$) (Jannson, Ala-Kokko et al., 2013). Researchers reported knowledge varied based on VAP intervention topic with positioning and oral care the highest (99.0%, 95.0%) versus humidification and suction system changes (5.0% and 26.7%).

Adherence was self-reported at 84%, with no significant difference between assistants and nurses (Jannson, Ala-Kokko et al., 2013). The highest adhered intervention was positioning and humification with heat and moisture exchangers, with both adherence rates reported at 94.1% (Jannson, Ala-Kokko et al., 2013). The lowest reported intervention was the use of continuous subglottic secretion, being adhered to only 27.7% of the time. Glove and gown usage rate of adherence was 24.8%. Primary barriers reported by the researchers included a lack of needed resources, equipment, and time, disagreement with the guidelines, patient specific barriers, knowledge deficits, and others. Minor barriers included outside of scope or role or disbelief of effectiveness were only reported by participants in 4.8% and 2.4% of the responses. Jansson, Ala-Kokko et al. (2013) noted findings were in line with previous studies but found nurse experience not to influence adherence. Researchers stated more info needed to address knowledge and adherence.

Guthrie et al. (2018) explored the impact of education and role clarification on EBP care specific to oral care as an associated factor to VAP rates on MV patients in a skilled nursing facility (SNF) in Minnesota using a quantitative design. Because oral care is a shared task between nurse and nurse assistants, the intervention included an emphasis on the nurses' responsibility for completing oral care on each patient (Guthrie et al., 2018). Adherence to the EBP protocol was audited using direct observation and oral assessment of patients. Guthrie et al. (2018) stated that sustained significant adherence to EBP protocol was demonstrated in all aspects of care except one component, the tracheostomy seal. Guthrie et al. (2018) concluded education, standardized care, role clarification, and resources allowed adoption and adherence to bundle care.

Wolfensberger et al. (2018) reviewed barriers and facilitators impacting VAP bundle compliance for the MV/T population. The study setting was in a large tertiary care center in Zurich, Switzerland using a mixed-methods approach using a behavioral theory: Behavioral Change Wheel (BCW). Adherence to a nine-task bundle was measured over four time intervals over 2 years (Wolfensberger et al., 2018). Data was collected using a chart review and direct observation. Researchers noted adherence varied per task. A focus group using semistructured interviews was conducted with physicians and nurses to understand barriers and facilitators to bundle implementation. Interviews lasted 35–45 minutes and were categorized using the nine themes of the BCW model (Wolfensberger et al., 2018). Seventy-nine coded statements included barriers with 25 being facilitators. Physical opportunity (49% of responses) and reflective motivators (21%) were found most commonly by the researchers. Social opportunity (7% of responses) and physical capability (2%) appeared the least in findings. Doubt of impact, overall wellness of the interventions, lack of equipment, lack of adequate staffing, competing priorities,

social, cultural milieu, or champions were influencers to adherence (Wolfensberger et al., 2018). Researchers suggested restructuring the environment and enablement of the HCP as aligned with the BCW framework. Wolfensberger et al. (2018) stated an accurate understanding of the rates of VAP through feedback may have contributed to protocol adherence. Also, an overall concern for wellbeing may have impacted adherence with the perception that subglottic suctioning would be noisy or oral care agent chlorohexidine may taste bad (Wolfensberger et al., 2018). Most suggestions for facilitators were exclusively technical based, supporting focused intervention rather than change behavior interventions.

McConnell et al. (2016) used a quantitative design to determine the use of an EBP checklist on the collection of arterial blood gases (ABG) in MV patients, a critical assessment to determine the effectiveness of delivered MV. However, due to the "competing priorities" (p. 903) in the care of the MV/T patient and the shared responsibility among the varied HCP disciplines, this task can be delayed. This study reviewed the impact of a standardized protocol and checklist for all patients following intubation on patient outcomes. A medical ICU in Philadelphia, Pennsylvania, was the setting for this study. A retrospective random sampling of MV adult patients included 70 analyzed pre-intervention and 118 post-intervention patients (McConnell et al., 2016). An MDT-created a checklist with 20 significant patient tasks were initiated, including an MD, RN, and RT review of tasks and assignments. At 60 minutes, the team members meet to confirm the completion of tasks and review any changes needed based on patient condition and diagnostic data. As a quality improvement study, the researchers collected feedback, and the plan adjusted over time, including staff education as needed. The electronic medical record was updated to include an MV order set and visual prompts eventually added to each ventilator.

Outcomes included ABG within 60 minutes, fidelity based on the proportion of subjects post-intervention, and sustainability measured as the proportion of subjects who had a completed checklist per month (McConnell et al., 2016). Results demonstrated significant ABG within 60 minutes noted post-intervention ($p = .01$), time to ABG was shorter ($p = .004$). Researchers noted APACHE III scores and occurrence of acidemia did not statistically differ between groups. Checklist adherence was greater in patients with MV initiated at the facility compared to patients who were receiving MV on transfer to the facility ($p = .006$). Night shift teams also had a higher adherence rate compared to day shift teams ($p = .02$). Assigning a team member to collect the ABG was associated with a higher rate of ABG collection with 60 minutes compared to patients without an assigned team member ($p = .01$) (McConnell et al., 2016). Standardized checklist protocols improved the ABG outcome but did not reach the goal of > 50% adherence until the last four months of the study. This time lag aligns with other checklist protocol studies supporting the assumption that changed behaviors requires time (McConnell et al., 2016). Due to the difference in adherence between in-patients and transferred patients, perceived stability of patient condition may be present, providing an opportunity for further education regarding the potential for changing conditions intra-transport. The researchers deemed behavior change was difficult for the staff as evidenced by low adherence rates. Role ambiguity may have contributed to the completion of tasks; therefore, it requires a leader or process owner (McConnell et al., 2016). Researchers concluded bedside staff shifts should be empowered to own the checklist for improved adherence. The quality improvement process of soliciting and incorporating feedback may have assisted in the checklist user ability and project's impact (McConnell et al., 2016).

Nonspecific EBP and current body of knowledge. EBP includes recommended practice based on current research practice and can be applied to any patient population (Jun et al., 2016).

The lack of uptake of EBP is dangerous and costly. Over 400,000 lives and more than one

trillion dollars are lost on EBP preventable harms to include sepsis, HAI venous

thromboembolism, and pulmonary embolism "related to lapses in care" (Jun et al., 2016, p. 55).

Tucker (2019) reported the average time of EBP uptake from research to the hospital units

averages 17 years and only 14% of all EBP becomes integrated at all. This discussion reviews

the current state of nonspecific EBP implementation research and EBP research using TDF to

frame the studies.

General review of EBP implementation and research. The ability to translate EBP from

research into practice requires EBP competency. EBP competency is defined by the American

Nurses Association (ANA) as "nursing performance that integrates knowledge, skills, abilities,

and judgment based on established scientific knowledge and expectations for nursing practice"

(Melynk et al., 2018, p. 17). Nursing academia has set competencies for nursing education.

However, there is no EBP competency for practicing nurses (Melynk et al., 2018).

Melynk et al. (2018) studied EBP competency of practicing nurses and identified

associated characteristics. The researchers created a descriptive survey with 24 EBP nurse and

advanced-nurse competencies. Nineteen hospitals across the U.S. were chosen to participate in

the online survey. Participants included 2,344 nurses. On a four-point scale, the researcher

reported no participant self-ranked as *competent* or *very competent* in EBP (Melynk et al., 2018).

The highest scoring item was "questions clinical practice" for improving the quality of care ($M =$

2.72, $SD = .76$), and items associated with EBP leadership had the lowest ($M = 1.97$, $SD = .80$)

(Melynk et al., 2018, p. 19). Researchers reported low age and high education were positively

associated with competency ($r = .66$). The strongest association with competency was EBP

mentorship ($r = .69$) and the ability to implement EBP ($r = .66$). Melynk et al. (2018) concluded

low results indicate a need for improvement in EBP competency across all levels and ages of nurses. Researchers further claimed academic practices that teach research practices rather than EBP competencies might contribute to this deficit. Based on various findings of strong association, Melynk et al. (2018) concluded that education of EBP, though important, is not the sole contributor to behavior change. The researchers urged more research is needed to understand impacting factors on EBP competencies.

Tucker (2019) completed an empirical review of the current state of knowledge on evidence-based practice in nursing. This article reviewed the models and frameworks used to assist practitioners in moving research into practice. Tucker (2019) stated models and theories vary based on intention and provided examples frequently used, including the Consolidated Framework and the Reach, Effectiveness, Adoption, Implementation, and Maintenance evaluation framework. Tucker (2019) discussed other frameworks considered classical theories including social cognitive theory, behavioral, or change theories like the Transtheoretical Model (TTM). The researcher also noted Grol and Grimshaw's as an early contributor to the EBP field of study. Tucker (2019) stated Grol and Grimshaw claimed a comprehensive approach was best suited for behavioral change 15 years ago and continues to be a strong theory. Tucker (2019) noted the components of a comprehensive strategy to include: education, audit, feedback, and reminders are key to supporting successful change in practice. Overall, Tucker (2019) stated many frameworks and models have been used to and are available for practitioners seeking to support EBP implementation into practice.

With the bulk of nurses in bedside practice, they are "often the most responsible for implementing clinical practice guidelines" (Jun et al., 2016, p. 55). Thus, understanding the barriers and facilitators of implementing EBP guidelines is key. Jun et al. (2016) conducted a

literature review to identify EBP influencing factors using the Critical Appraisal Skills Program (2014) tool to review articles. A total of 16 articles were selected from the U.S., Australia, Canada, Finland, Singapore, Sweden, and the Netherlands. All the studies included nurse groups other professions including pharmacists and physicians. Adherence to clinical guideline tasks was reported to range from 53% to 83.4% (Jun et al., 2016). Researchers organized barriers and facilitators into internal and external factors to include guidelines, resources, leadership, organizational culture, attitudes and perceptions. Internal factors were most frequently reported (Jun et al., 2016). Researchers found the following influences:

- Lack of motivation, lack of commitment and relevance, and resistance to change;

- Perception of patient well-being (discomfort);

- Fear of lack of autonomy;

- Lack of social pressure from physicians' lack of adherence;

- Empowerment, motivation and commitment;

- Knowledge;

- Perceived usefulness, relevancy and potential to minimize errors;

- Effect on patient care;

- Guideline clarity or lack of guideline availability;

- Electronic clinical guidelines or reminders;

- Peer endorsement;

- Resources;

- Leadership and peer support, and;

- Communication or agreement between shifts and/or disciplines.

Jun et al. (2016) concluded various factors are known to impact clinical practice adherence in the nursing profession, but more research is needed, noting the limitation of self-reported adherence. Jun et al. (2016) further emphasized the importance of valid tools to measure facilitators and barriers to better understand factors associated with adherence.

Shuman, Powers, Banaszak-Holl, and Titler (2019) explored structural factors of environment, operations, and social dynamics of roles, relationships, and dynamics of the individual or group. Few studies have examined how leadership impacts EBP implementation (Shuman et al., 2019). This study explored nurse manager (NM) perceptions and behaviors, and staff and manager perceptions of leadership behaviors and culture on EBP. Seven community hospitals of varied sizes in the Midwest and northeastern U.S. comprised the convenience sampling population of this descriptive survey study. Twenty-three nurse managers and 287 staff nurses responded to the survey. Researchers reported NM's EBP competency based on a Likert type scale. Managers self-rated EBP competency, knowledge and activity between somewhat competent and competent. Proactive EBP leadership behaviors were the lowest scoring items for both NM self-perception and RN perception of NM. Both groups rated NM behaviors aligning with EBP leadership behaviors to a *moderate extent*. Shuman et al. (2019) concluded multiple tasks and factors are barriers to EBP implementation. The researchers recommended a better understanding of NM barriers to promoting culture and leadership behaviors conducive to EBP implementation is needed.

EBP implementation studies using TDF. The literature demonstrated a general lack of implementation of EBP in the healthcare setting (Jun et al., 2016; Jylha et al., 2017). To offer a simplified yet comprehensive framework to inform HCP behavioral change in EBP, Miche et al. (2005) created the TDF. The TDF was validated and later updated in 2015 by Cane et al. (2012).

Over 800 studies have cited the framework in EBP implementation research (Atkins et al., 2017). This discussion reviews a small sampling of varied EBP implementation studies identified in the literature review that utilized TDF (Craig et al., 2017; Curtis et al., 2017; Debano et al., 2017; Goddard et al., 2018). Only one study identified in this literature search (Goddard et al., 2018) framed EBP using the TDF in the MV/T population.

Aligned with the UK Medical Research Council, Craig et al. (2017) utilized TDF to assist in the implementation of and adherence to a stroke protocol. This qualitative study examined an intervention for stroke using the TDF to guide Behavioral Change Techniques (BCTs). This article focused on only one of the four steps in a multiphase intervention (Craig et al., 2017). This step was the identification of desired behaviors from an MDT using TDF to identify barriers and facilitators. Researchers coded and organized the desired behaviors to 13 of 14 TDF domains and appropriate BCTs to target barriers. Craig et al. (2017) claimed specific interventions identified had great potential for creating change as they had been developed using a behavioral theory. The researchers noted this is the researcher's opinion (Craig et al. 2017). The collaboration of behavioral researchers and clinical experts have deemed an advantage in optimizing clinical behavioral change for better adherence. Researchers urged more research is needed to create valid tools aligning with BCT and the BCT selection process.

Lack of adherence to evidence based clinical guidelines impacts quality patient care Curtis et al. (2018). Researchers developed a protocol for patients who experienced a blunt chest injury. The setting of the study was an emergency department in New South Wales, Australia. A mixed-methods study was conducted based on Accelerated Implementation Methodology. An MDT was created to develop an EBP protocol and educate the multidisciplinary members. Regular in-services were conducted and supplemented with educational packets. Flowchart

copies were posted throughout the ED. The researchers evaluated adherence, then assessed and mapped barriers to the TDF. Within the study period, researchers found 424 patients were eligible for protocol care, with only 290 (68.4%) receiving the care. Researchers identified 25 themes, linking to all 14 TDF domains (Curtis et al., 2018).

Debano et al. (2017) conducted a qualitative study using semistructured interviews with 19 Australian nurses from two hospitals. TDF framed the study to understand influences on nurses' charting in a new computerized system to reduce medications, aligned with EBP. Researchers mapped responses to nine domains, with the most cited domains being *social/professional role and identity* and *environmental* context. Resource domains included the availability of resources or adherence factors from the surrounding environment (Debano et al., 2017). Responses assigned to the *social/professional role and identity* domain included concerns regarding the scope of practice or authority, perceived priorities for the role of the nurse, and perceptions of hierarchy among the ranks of nurses by experience levels. Based on the responses, Debano et al. created potential interventions. The study results aligned with other TDF studies noting influence from multiple domains and the potential to create specific interventions that target influences. Debano et al. (2017) also emphasized the *social/professional role and identity* as a barrier. The researchers urge more research "moderating variables" (p. 12) to understand nurses' judgments regarding the new technology as a lack of confidence with technologies may threaten perceived nurse roles.

Goddard et al. (2018) utilized a qualitative approach with semistructured interviews to explore the beliefs among critical care professionals regarding barriers and facilitators to early physical and/or occupational therapy rehabilitation in the MV population framed with TDF. Recruitment of the online group, *ICU Recovery Network*, sampled critical care RNs, MDs, RTs,

and physical or occupational therapists from the U.S. and Canada with a variety of practice

environments, skills, and experience (Goddard et al., 2018). A total of 40 professionals, 10 of

each professional group, were interviewed by one person using semistructured interviews lasting

a mean of 46 minutes. Highly important TDF domains included skills, both TDF social domains,

identity, beliefs about capabilities, consequences, and the environmental domain. Researchers

noted primary domain results of environmental context/resources and consequences were

identified as barriers (Goddard et al., 2018). New findings seemed to emerge as the social

domains were noted to be important factors to behavioral influences (Goddard et al., 2018). The

researchers encouraged more study be conducted to explore the social and role domain on

behavior in an attempt to develop protocols that include social facilitators.

   Influencers in the TDF social domains emerge as a theme. As noted above, Craig et

al., (2017) Curtis et al., (2018), Debano et al. (2017), and Goddard et al., (2018) utilized TDF

with study results finding barriers assigned to the social domains, *social/professional role and*

identity and *social influences*. Both Debano et al. (2017) and Goddard et al. found social domains

to be the top domains influencing EBP practice. Goddard et al. was the only study identified in

this literature review that targeted HCP in the MV/T population. Though these are the only

studies specifically noting social domains of the TDF, findings from other studies align with

social domains as defined by Lipworth et al. (2013). Influencers related to the social domains

included:

- Peer or leader support (Klompas et al., 2014; McGrath et al., 2017; Wolfensberger et
  al. 2018);

55

- Shared duties, decision making, or role ambiguity between RN, MD, and RT (Abode et al., 2016; Guthrie et al., 2018; Klompas et al., 2013; McConnell et al., 2016; Southcott et al., 2019; Welton et al., 2016), and;

- HCP empowerment (Khan et al., 2019; Mah et al., 2017).

The limited amount of MV/T-specific EBP using the TDF and the emerging theme of EBP adherence social factors support the exploration of more research in this area.

Summary review of research. The literature reviewed supports guidelines promoting specific EBP interventions and tasks to improve MV/T patient outcomes (Klompas et al., 2014; Mitchell et al., 2013). Unfortunately, a lack of implementation of EBP impacts the effectiveness of EBP (Timsit et al., 2017). Further exploration of EBP implementation notes a widespread problem in healthcare (Jun et al., 2016). The literature identified a lack of nonspecific EBP competency among nurses (Melynk et al., 2018) with various barriers and facilitators influencing HCP EBP behaviors (Jun et al., 2016). Noting the complexities of human behaviors, EBP research emphasizes the potential benefit of utilizing behavioral theories to inform research studies (Atkins et al., 2017; Tucker, 2019).

Of frameworks used, TDF were noted to be the most prevalent within this literature reviewed though most not specific to MV/T. Four studies (Craig et al., 2017; Curtis et al., 2017; Debano et al., 2018; Goddard et al, 2018) used the TDF or a combination of TDF and BCW to explore EBP adherence factors. Goddard et al. (2018) was specific to the MV/T population and used the TDF. However, social factors were noted as primary influencers to EBP in two studies (Debano et al., 2018; Goddard et al., 2018). Despite a lack of MV/T-specific TDF literature, many studies identified social factors impacting adherence, as defined by the TDF using Lipworth et al. (2013), had the TDF been utilized (Abode et al., 2016; Guthrie et al., 2018; Khan

et al., 2019; Klompas et al., 2013; McConnell et al., 2016; McGrath et al., 2017; Southcott et al., 2019; Welton et al., 2016; Wolfensberger et al., 2018).

Methodological Review

The studies included in this literature review are diverse in methodology. This review includes all major methodology types with varied sub-types. Varied methodologies provide advantages and disadvantages. This methodological review is organized by methodology. This section collectively addresses the unique limitations of the studies, the general advantages, and the disadvantages of the designs.

Quantitative. The bulk of the studies included in the literature review are quantitative. Quantitative methods include the systematic gathering and measurement of objective data with an attempt to control confounding factors (Polit & Beck, 2004). This section organizes the quantitative studies according to types.

*Quasi-experimental***.** Due to the complexities of the primary outcomes of interest in these studies involving either or both patient health outcomes and/or HCP behaviors, no study executed a true experimental design with manipulation, control, and randomization (Polit & Beck, 2004). Four studies (Mah et al., 2017; McConnell et al., 2016; Sousa et al., 2019; Southcott et al., 2019) executed a quasi-experimental methodology through randomization and/or control of confounding variables through statistical analysis. These studies are reviewed based on the strength of control measures.

McConnell et al. (2016) performed a retrospective random sampling of 80 pre-intervention and 144 post-intervention patients receiving mechanical ventilation from a total of 586 patients. The study included a pre- and post-intervention design over one year. Feedback was provided during this quality improvement study. Primary outcomes included adherence to

the protocol of obtaining ABG within 60 minutes of MV initiation with secondary outcomes of time to ABG, frequency of moderate-severe acidemia at ABG, and frequency of respiratory acidosis (McConnell et al., 2016). Researchers attempted to control for confounding factors of patient condition on outcomes using Acute Physiology, Age, Chronic Health Evaluation (APACHE) III scores were collected. This score allows researchers to determine if the patient groups have significantly different health severities that may impact results.

Mah et al. (2017), Sousa et al. (2019), and Southcott et al. (2019) also utilized a quasi-experimental design by control for patient health severities to minimize confounding variables on primary study outcomes which consisted of patient health outcomes such as duration of MV (Mah et al., 2017), weaning-related activities (Southcott et al., 2019), and VAP rates (Sousa et al., 2019). Mah et al. (2017) and Southcott et al. (2019) utilized the APACHE II scoring system for 393 patients and 65 patients, while Sousa et al. (2019) utilized a simplified scoring system, Simplified Acute Physiology Score II (SAPS), for 828 patients. Neither study completed randomization weakening results compared to McConnell et al. (2016) that included randomization and control for patient condition. Both Sousa et al. (2019) and Southcott et al. (2019) used a pre- and post-intervention design to measure standardized care and adherence to patient outcomes.

Southcott et al. (2019) also conducted a staff survey to understand knowledge and confidence in EBP skills required for EBP execution. Though the survey was for all HCPs, the respondents were mostly nursing for both the pre- (79%) and post-intervention groups (76%). Surveys were closed-ended. It is unclear how the surveys were distributed or collected. The number of surveys distributed and collected was not available. Staff surveys provided insight into potential barriers to EBP; however, the close-ended surveys may have limited the

58

participants' responses. Without a further understanding of the staff survey methodology, it is difficult to determine other potential biases.

All quasi-experimental studies allowed for some control and/or randomization of groups, reducing potential bias. The advantage of this methodology allowed the researchers to analyze patient conditions that could have falsely increased or decreased the impact of the interventions on the outcomes. All used a retrospective chart review to obtain the objective data for patient health outcomes. Adherence measurements varied between the groups. McConnel et al. (2016) and Mah et al. (2017) collected adherence rates through a chart review for indicators of interest, such as ABG results (McConnel et al., 2016) or ancillary referral (Mah et al., 2017). Sousa et al. (2019) noted adherence was recorded based on regular audits providing feedback without additional information. Direct observation may introduce the Hawthorne effect bias as staff may have altered his/her behavior based on knowing individuals were being observed (Polit & Beck, 2004). Finally, staff surveys were performed in one study (Southcott et al., 2019), but a lack of methodology information limits further analysis of potential bias.

Preexperimental. The bulk of the quantitative studies were preexperimental in design (Abode et al., 2016; Dixon et al., *2018*; Fisher & Oster, 2017; Guthrie et al., 2018; Khan et al., 2019; McEvoy et al, 2017; McGrath et al., 2017; McKeon et al., 2018; Nyeo et al., 2016; Welton et al, 2016). The methodology did not include randomization or control for patient condition severity. Yet the studies included a specific intervention and measured for impact on outcomes. These studies included either prospective or retrospective methods for data collection. Study discussion is organized based on design similarities.

The two largest studies were both preexperimental, prospective studies to determine invasive artificial airway MDT EBP protocols and adherence to patient outcomes (Abode et al.,

2016; Khan et al., 2019). The studies shared many commonalities and were part of a quality improvement project which included immediate feedback and intervention along with the project, allowing adjustment as needed to continue to improve outcomes. Abode et al. (2016), the larger study, was conducted over 6 years in an outpatient setting, totaling all 1,273 tracheostomy patients seen during that timeframe. The latter study was smaller, including 1,231 mechanically ventilated patients over one year (Khan et al., 2019). Population size was a strength for these studies; however, a lack of randomization and methods to control patient condition weakened the results (Polit & Beck, 2004). The continuous feedback, modification of interventions may have improved results (Abode et al., 2016; Khan et al., 2019); however, it limits the ability to determine true cause and effect of specific interventions and increases risk of selection bias (Speroff & O'Connor, 2004). The prospective nature of the studies prevents a baseline comparison group. Both studies utilize chart review to measure adherence to the MDT EBP protocols set within the studies.

Eight studies utilized quantitative, preexperimental studies using a pre- and post-intervention group to understand the impact of MDT EBP interventions, with or without adherence rate collection, on tracheostomy/ventilated patient outcomes (Dixon et al., 2018; Fisher & Oster, 2017; Guthrie et al., 2018; McEvoy et al, 2017; McGrath et al., 2017; McKeon et al., 2018; Nyeo et al., 2016; Welton et al, 2016). These studies were relatively small, ranging from four (Fisher & Oster, 2017) to 296 patients (McGrath et al., 2017). All included a baseline cohort, then applied MDT EBP education and interventions to determine the impact on patient outcomes. All but one study (Guthrie et al., 2018) used a retrospective chart review to gather patient outcomes of interest. Guthrie et al. (2018) assessed outcomes on oral health through direct patient assessment. Similar to other studies reviewed, adherence was measured through

60

direct observation (Guthrie et al., 2018) or through chart review (Dixon et al., 2018; Fisher & Oster, 2017; McEvoy et al, 2017; McGrath et al., 2017; McKeon et al., 2018; Nyeo et al., 2016; Welton et al, 2016). Two studies were conducted at either two (Dixon et al., 2018) or four (McGrath et al., 2017) facilities, increasing credibility by varying populations, though both studies covered a small geographical area. No study in this group was randomized.

Two of the preexperimental pre- and post-studies discussed included staff surveys (Fisher & Oster, 2017; Welton et al., 2016). Fisher and Oster (2017) distributed surveys to understand the effectiveness of the educational intervention on comfort and comprehension. The researcher did not provide any additional information regarding methodology or how many staff were surveyed or responded, limiting analysis of strengths and weaknesses. Welton et al. (2016) utilized a survey to measure staff perception of improved care after the intervention. The sample included 22 respondents. Understanding EBP facilitators and barriers such as comfort and knowledge (Fisher & Oster, 2017) and perception of effectiveness (Welton et al., 2016) is important to foster and sustain EBP in practice (Tucker, 2019). The use of these additional staff surveys allows the collection of staff perceptions.

Nonexperimental. The final two quantitative studies included in this review utilized a nonexperimental, cross-sectional method with convenience sampling (Melynk et al., 2018; Shuman et al., 2019). Shuman et al. (2019) surveyed nurses and/or nurse managers to explore the general competency in EBP knowledge (Melynk et al., 2019) or how nurse manager support impacted the implementation of general EBP (Shuman et al., 2019). The simpler and more economic nature of the cross-sectional survey may increase the researchers' ability to reach more participants (Polit & Beck, 2004). This was true of both studies that included seven (Shuman et al., 2019) and 19 (Melynk et al., 2018) hospitals.

The cross-sectional design did not include multiple time points of data collection (Polit & Beck, 2004). One time point does not allow trending, as seen in longitudinal data collection (Caruana, Roman, Hernández-Sánchez, & Solli, 2015). Convenience sampling may not truly represent the population, with a potential response bias, further limiting generalizability (Polit & Beck, 2004).

Quantitative overview. Three types of quantitative studies were included in the literature. The primary strength of quantitative research includes an objective measurement of the outcomes at one, or more than one, point in time (Polit & Beck, 2004). Using a quasi- or preexperimental design provides an opportunity to understand a cause and effect relationship between the variables (Mertler, 2015) such as EBP protocol, education, and/or checklists on adherence or patient outcomes. The use of randomization and controlling for confounding factors can increase the ability to generalize results for broader use (Polit & Beck, 2004; Speroff & O'Connor, 2004).

Objective data collection using surveys or chart review can be relatively simple and economical (Polit & Beck, 2004). This factor may have allowed researchers to increase the included participants either through a higher response rate from direct survey administration or through either use of mail or telephone surveys (Mertler, 2015). The sample sizes of the studies reviewed ranged from four (Fisher & Oster, 2017) to 2,344 (Melynk et al., 2018) subjects over one to 19 facilities (Melynk et al., 2018). With the goal of quantitative research to generalize results to a greater population, sample size is critical (Mertler). However, most studies included convenience sampling. Only one study randomized the sampling (McConnell et al., 2016), which limits the ability to generalize results due to the potentially inaccurate representation of the target population (Mertler).

Many of the quantitative studies utilized a longitudinal cohort design, which allowed researchers to observe outcome trends over time (Caruana et al., 2015). This cohort design allowed researchers to increase the subjects over time while still representing the desired MV/T population (Mertler, 2015). The longitudinal cohort design was advantageous to understanding the long-term impact of the EBT MDT interventions over varied cohorts of participants (Caruana et al., 2015). Further, adherence was a primary outcome of interest for some studies. The longitudinal design allowed the researchers to determine how adherence changed, and simultaneously, how patient outcomes changed over time. Finally, longitudinal studies may offer the benefit of reducing point in time biases for the outcomes of patient health data or HCP behaviors. With multiple points of data collection, confounding factors such as season illnesses or sudden staff turnover may be reduced (Caruna et al., 2015); however, selection biases and carryover effects may exist (Speroff & O'Connor, 2004).

The largest study in terms of population (Melynk et al., 2018) was completed using a cross-sectional design. Along with Shuman et al. (2019), these studies spanned multiple facilities ranging over seven hospitals and 22 varied hospital units. This wide reach was possible using a one-point data collection method (Caruana et al., 2015).

Though many advantages can be found in quantitative research, some limitations exist. Randomization was only included in one study (McConnell et al., 2016). Lack of randomization drastically reduces the ability to generalize to the larger group, a key benefit in quantitative studies (Mertler, 2015). Specific to this population, a lack of standardization in patient outcomes, such as the defining criteria of VAP, can further limit the researchers' ability to perform surveillance (Klompas et al., 2014). Furthermore, the quantitative design limits the ability to

deeply explore participants' perceptions (Polit & Beck, 2004), which may be key to examining behaviors related to adherence to EBP.

Study data, such as patient data and adherence rates, can be easily and objectively collected using quantitative methods (Polit & Beck, 2004). Quantitative measures offer an economic benefit that can expand the researchers' ability to increase patient cohorts or subjects by increasing time and the geographic areas through survey distribution. However, health and behavior are complex and dynamic, a direct contradiction to the "quantitative belief that the world is a relatively stable and uniform place, such that we can measure and understand it" (Mertler, 2015, p. 108).

Qualitative. Two qualitative studies are included in this literature review (Craig et al., 2017; Goddard et al., 2018). Qualitative methodologies included a case study (Craig et al., 2017) and a grounded theory approach aiming to explore barriers to EBP implementation (Goddard et al., 2018). Both studies were framed using the TDF.

Craig et al. (2017) used a qualitative case study to identify an implementation strategy for an EBP stroke protocol. Participants were purposefully selected, deemed experts in a variety of healthcare fields by the researchers, from 13 healthcare facilities in Australia. Participants represented the RN, RT, and MD professions. One-hour workshops were conducted at each facility, led by the researchers to identify factors related to the behaviors of interest (Craig et al., 2017). Researchers coded responses from audio tapes and transcripts of the workshops. Themes were mapped to the TDF constructs, then further cross-referenced with appropriate BCTs.

A grounded theory approach was used by Goddard et al. (2018) which explored barriers to implementing EBP in MV/T patients using semistructured interviews. Sampled participants from an online group consisted of critical care healthcare professionals from the U.S. and Canada

which may have induced selection bias (Polit & Beck, 2004). Researchers selected an equal representation of 10 nurses, 10 physicians, 10 respiratory therapists, and 10 rehabilitation specialists. An interview guide was created by two critical care experts aligning with the TDF. Telephone interviews lasting an average of 46 minutes were recorded, transcribed, then categorized. After analysis, researchers identified highly important domains related to EBP implementation behaviors.

The qualitative methodology allows the researcher to observe and analyze themes and patterns within the natural setting of the participants or the phenomenon of interest (Creswell, 2011; Saldaña, 2015). As many of the outcomes of interest in this literature review are specific to human behaviors such as adherence to practice, the qualitative method within the patient care setting allows researchers to observe participants "within their context" (Creswell, 2011, p. 45). The advantages of the semistructured interviews used in Goddard et al. (2018) allowed participants to describe barriers as perceived. Similarly, the case study utilized in Craig et al. (2017) allowed the participants to actively discuss and choose behaviors as they related to the researchers' TDF framework. In these methodologies, the researchers explored the realities of the participants in his/her setting (Mertler, 2015). The interaction between the participants and the researchers during the hour workshops or the averaged 46-minute telephone interview allowed a more intimate interaction compared to quantitative methodologies. Such interaction allows a "more rich and thick description" of the responses or experiences (Johnson & Onwuegbuzi, 2004, p. 14).

The disadvantages of the qualitative approach include a lengthy process (Suter, 2012). Craig et al. (2017) modified the study due to time restrictions. Rather than reviewing all 12 behaviors, the participants were limited to mapping only one. Though the approach allows a

detailed and in-depth review of the participants' experience, results may be less generalizable (Johnson & Onwuegbuzi, 2004). Additionally, the qualitative approach did not allow an objective measure of current adherence, though proponents of qualitative research argue validity is still achievable (Baxter & Jack, 2008; Cutliffe & McKenna, 1999). Though the study addressed barriers and facilitators to adherence, the methodology limited the understanding of the current practice. While the data collected was complex and allowed researchers to plan strategic interventions, the study did not implement interventions. A lack of interventions prevents researchers from drawing cause and effect relationships (Creswell, 2013).

  Mixed methods. Four studies utilized the mixed-method approach (Curtis et al., 2018; Jannson, Ala-Kokko et al., 2013; Jannson et al., 2018; Wolfensberger et al., 2018). All studies primarily targeted adherence to EBP and EBP barriers and facilitators. This paper organizes these studies based on design likeness.

  Curtis et al. (2018) chose a mixed-methodology that included both a retrospective chart review and semistructured interviews in determining adherence to EBP and identify facilitators and barriers. Researchers stated the goal of the study was to design specific strategies to improve adherence based on the data collected. The chart review was performed to identify a cohort of patients who had experienced blunt force chest trauma over 2 years (Curtis et al., 2018). The researcher included all 424 eligible patients, then sorted by those receiving the EBP protocol or not. Patient injury scores and demographics were also collected to control for injury severity. Adherence was determined from this review (Curtis et al., 2018). Convenience sampling of 99 health care providers represented specialties of trauma pain, physiotherapy, emergency, and medicine. The participant survey included demographics, Likert-type questions about barriers mapped to TDF, and open-ended questions for additional comments. Researchers mapped these

comments to TDF (Curtis et al., 2018). Though a retrospective chart review included 2 years, the convenience sampling of HCPs represented only one point in time. HCP responses from the convenience sample may not have accurately captured reasons for lack of adherence 2 years ago or have confounding carry over effects unaccounted for from earlier times (Caruana et al., 2015; Speroff & O'Connor, 2004).

Jannson et al. (2018) and Jannson, Ala-Kokko et al. (2013) used a mixed-methodology utilizing questionnaires distributed to critical care staff to determine adherence rates and barriers. Both studies specifically reviewed knowledge of EBP and adherence using convenience sampling of staff nurses. Survey tools included closed-ended questions with one open-ended question. The surveys asked the participants to self-report adherence and to answer questions regarding the EBP in question. Jannson, Ala-Kokko et al. (2013) distributed the surveys via nurse managers who supervised the completion of the surveys. Jannson et al. (2018) distributed surveys with similar items regarding adherence and knowledge in nurse facility mailboxes. A total of 101 (Jannson, Ala-Kokko et al., 2013) and 108 (Jannson et al., 2108) were returned. The open-ended question in both studies allowed the participants to list any other barriers he/she may have to EBP implementation.

Wolfensberger et al. (2018) utilized focus group interviews to understand optimal behavioral interventions to increase EBP adherence. Over 2 years, researchers collected data through chart review and direct observation on adherence rates to EBP protocols. During the mid-point of the study, six, one-hour focus groups of convenience-sampled groups representing multiple healthcare professions were conducted (Wolfensberger et al., 2018). Taped and transcribed, responses were categorized using a ground theory approach and mapped to TDF. These coded barriers and facilitators were later matched to BCW by the researchers.

The mixed-methods approach provides researchers with the option of combining various research techniques to best address the research question (Johnson & Onwuegbuzie, 2004). The studies that opted for this method were able to collect objective data, such as adherence rates and knowledge levels. Studies also explored participants' perceptions of barriers and facilitators to adhering to EBP protocols.

Generally, the limitations of the studies above resemble other limitations of previously discussed qualitative and quantitative studies. Convenience sampling may bias the perception of one group of participants (Mertler, 2015). Longitudinal studies provide a review of trends and sustainment but may cloud the ability to point to a direct cause and effect due to confounding factors over time (Caruana et al., 2015). Snapshot studies represent only one point in time, limiting the broader picture. Data collection methods, such as direct observation of survey completion or adherence, may bias participants' responses or actions (Polit & Beck, 2004). Mixed-methodology demonstrates strengths and weaknesses similar to purists' traditional methodologies. However, the mixed-methodology offers a blending of data collection that may strengthen individual limitations as long as "overlapping of methodology weaknesses" are considered (Johnson & Onwuegbuzie, 2004, p. 18). This was evident in Wolfensberger et al. (2018) that utilized self-reporting adherence, chart review, and direct observation as methods of determining adherence rates. Focus groups also explored self-reported adherence and barriers, which allowed a comprehensive perspective on the outcome of interest. Mixed-methodology allowed the researchers to expand data collection opportunities that best fit the outcomes of interest.

Overall, the strengths of quantitative studies allow an objective look at data like the patient outcomes and adherence rates. Limitations of such studies included confounding patient

health variables and an inability to understand other factors that may have influenced HCPs.

None the less, the studies' findings aligned with other larger, landmark analyses such as SHEA

and the CDC (Klompas et al., 2014) to demonstrate that EBP, when adhered to, can improve

MV/T patient outcomes. Unfortunately, adherence rates gathered by these studies were below

expectations, limiting the effectiveness of EBP. Qualitative studies explored reasons influencing

behaviors. This exploration allows a more personal, complex understanding of the perspectives

of the HCPs, allowing researchers to conclude multiple factors of influence impact behaviors.

Though beneficial to begin crafting strategic interventions aimed at behavior barriers, the

interventions may not be generalizable due to the qualitative study's more detailed approach. The

mixed-methods provided a more comprehensive approach by facilitating objective and subjective

data. These studies gathered adherence rates while asking participants about adherence

influences. Similarly, these studies noted adherence rates subjective to influencing factors found

in qualitative studies of varied origin.

Synthesis of Research Findings

EBP for MV/T care exists in sufficiency and quality to inform multiple guidelines and

recommendations from leading health organizations (Klompas et al. 2014, Mitchell et al., 2013).

Quantitative studies demonstrate a significant impact of MDT-led EBP intervention on a variety

of MV/T general (McGrath et al., 2017; McKeon et al. 2018; Southcott et al., 2019) and specific

patient outcomes (Dixon et al., 2018; Khan et al., 2018). However, a lack of adherence to EBP

has been demonstrated in MV/T literature (Jansson, Kaariainen et al., 2013; Nyeo et al., 2016).

Quantitative studies included in this literature review specific to the MV/T population concluded

educational and resource-specific interventions demonstrated improvement in adherence rates,

but researchers noted more research is warranted to determine other influencing factors (Jansson, Ala-Kokko et al., 2013; Guthrie et al., 2018).

Less than desired implementation and adherence rates to EBP is not unique to the care of the MV/T patient. One review article noted a general EBP implementation rate of 14% and only after an average of 17 years after initial recommendation (Tucker, 2019). A review of the literature identified a variety of factors influential in EBP implementation. Melynk et al. (2018) used quantitative methods to identify a low rate of EBP competency in practicing nurses. Jun et al. (2016) conducted a systematic review of the literature to identify various factors influencing EBP implementation. Shuman et al. (2019) explored leadership behaviors on EBP implementation to conclude that many factors impact behavioral uptake of EBP. Tucker (2019) reviewed multiple methods used to research and frame EBP implementation, which can be noted throughout this literature review. All concluded more research is needed to understand HCP behaviors better and influencing factors contributing to EBP implementation, with Jun et al. (2016) emphasizing the need for validated tools to execute such research.

Using the TDF, a validated and simplified behavioral framework, four studies explored EBP implementation barriers and facilitators (Curtis et al. 2017; Craig et al., 2017; Debano et al., 2017; Goddard et al., 2018). Curtis et al. (2017) and Craig et al. (2017) explored factors influencing stroke or blunt-force trauma and concluded either 13 or 14 of the 14 TDF domains to inform specific interventions using the BCW. Debano et al. (2017) and Goddard et al. (2018) aimed only to identify factors influencing EBP behavior and map to TDF. Both studies found top influencing factors mapped to social domains, either social/professional role or social influence. Goddard et al. (2018) was the only study to utilize TDF and include MV/T EBP. Craig et al. (2017) and Curtis et al. (2018) encouraged more research regarding the use of TDF to inform

BCW, while Goddard et al. (2018) and Debano et al. (2017) urged more research exploring how the TDF social domains may impact EBP implementation.

Social or professional role influences were also noted in other studies, though not a primary outcome nor a result of TDF utilization. Three studies acknowledged the potential impact of role overlap between HCP that may decrease adherence (Abode et al., 2016; McConnell et al., 2016; Welton et al., 2016). Khan et al. (2018) also noted the potential influence of social forces, citing Goddard et al. (2018).

The literature reviewed shows EBP adherence is important to the MV/T population (Klompas et al., 2013). However, varied barriers exist, preventing optimal care delivery (Jun et al., 2016). Many approaches to addressing barriers have been attempted (Tucker, 2019). A popular framework, TDF, has been successful in other healthcare EBP adherence areas, demonstrating improvement in hand hygiene and catheter-based infections (Atkins et al., 2017). The only MV/T study using the TDF approach found similar adherence influencers, aligning with other MV/T adherence studies. However, two social domains were noted as primary domain influencers (Goddard et al., 2018). Social influences are understudied in the MV/T EBP research (Goddard et al., 2018). However, in review of the literature, many MV/T studies exploring adherence barriers noted influences that seem to align with the definitions of TDF social factors, particularly due to the multidisciplinary focus of the EBP (Abode et al., 2016; Guthrie et al., 2018; Klompas et al., 2013; McConnell et al., 2016; McGrath et al., 2017; Southcott et al., 2019; Welton et al., 2016; Wolfensberger et al. 2018). Thus, the noted gap within the literature is a lack of TDF informed research to explore the impact of social domains influencing MV/T EBP adherence.

Critique of Previous Research

        MDT-led MV/T EBP demonstrates effectiveness in improving patient outcomes. All studies with the primary objective to explore the effectiveness of MV/T EBP care on patient outcomes utilized quantitative methodologies ranging from quasi- to nonexperimental designs (Abode et al., 2016; Dixon et al., 2018; Fisher & Oster, 2017; Khan et al., 2019; McEvoy et al., 2017; McGrath et al., 2016; McKeon et al., 2018; Sousa et al., 2019; Southcott et al., 2019; Welton et al., 2016). All studies included an MDT-led approach, implementing one or more EBP interventions including:

- Staff education (McGrath et al., 2016; Southcott et al., 2019);

- EBP bundled care, checklists, or standardized protocols (Fisher & Oster, 2017; Khan et al., 2019; Sousa et al., 2019; Welton et al., 2016);

- Targeted surveillance (Abode et al., 2016; McKeon et al., 2018); and/or

- MDT routine rounding and patient care (Dixon et al., 2018; McEvoy et al., 2017).

All studies noted an improvement in at least one outcome as a result of the MDT-led EBP interventions using a pre- and post-intervention, quantitative, quasi- or preexperimental studies. Only six studies (McEvoy et al., 2017; McGrath et al., 2016; Sousa et al., 2019; Southcott et al., 2019; Welton et al., 2016) included statistical significance in the methodology, limiting the claims of those studies unable to utilize statistical analysis (Abode et al., 2016; Dixon et al., 2018; Fisher & Oster, 2017; McKeon et al., 2018). Recognizing studies that include statistical data as a strength, all but one EBP intervention targeted surveillance, were supported by studies using this strategy. This strongly supporting three of four EBP interventions: *staff education*, *EBP-bundled care, standardized protocols*, and *MDT routine rounding and direct patient care*, to improve MV/T patient outcomes.

The literature has limited studies with claims measuring patient outcomes due to the complex, confounding factors noted in all MV/T studies such as patient health severity, simultaneous treatments, and non-conformance of surveillance standards across the industry (Klompas et al., 2014; Timsit et al., 2017). Sousa et al. (2019) and Southcott et al. (2019) factored for health severity using APACHE scores, strengthening claims made by the researchers. The Southcott et al. (2019) study was limited to only 65 subjects; however, the Sousa et al. (2019) study included 828 subjects, supporting the claim of MDT-led EBP bundle-care impacts patient outcomes.

Similar findings among quantitative studies exploring the impact of MV/T EBP on outcomes, though varied in study strength, represent multiple patient sub-populations within the MV/T population. These include:

- Adult or pediatric patients;

- MV via tracheostomy or endotracheal tubes, or:

- Tracheostomy patients without MV;

- Over a variety of setting such as critical care, acute ward care, tertiary care, or outpatient.

Despite the varied sub-populations over diverse settings, these studies claimed varying levels of patient outcome improvement. A vast spread of geographies was also represented in the literature including Australia (Southcott et al., 2019), U.S. (Abode et al., 2018; Dixon et al., 2018; Fisher & Oster, 2017; McEvoy et al., 2017; McKeon et al., 2018), U.K. (McGrath et al., 2017), Canada (Welton et al., 2016), and Portugal (Sousa et al., 2019). Despite the population heterogeneity, all studies found at least some level of MDT EBP effectiveness. This generalizability of impact over

this wide group further supports claims that implementation of MV/T EBP improves patient outcomes.

The literature claimed improvements with MDT-led EBP interventions. Combined interventional strategies, coupled with extraneous patient and environmental factors, created difficulty in determining exact cause and effect relationships. However, the objective data, particularly statistically significant data, of patient outcome improvements, support the claims. Despite notable weakness as discussed, the methodologies and limitations align with landmark studies within this field, and claims align supporting major MV/T guidelines (Klompas et al., 2014; Mitchell et al., 2013).

MV/T adherence is subpar and threatens effectiveness. MV/T literature demonstrates a lack of adherence to EBP. Eight studies collected data on MV/T adherence rates or explored factors contributing to MV/T adherence rates (Fisher & Oster, 2017; Goddard et al., 2018; Guthrie et al., 2018; Jansson, Ala-Kokko et al., 2013; Jansson, Kaariainen et al., 2013; Khan et al., 2019; Nyeo et al., 2016; Sousa et al., 2019; Wolfensberger et al., 2018). Methodologies of these studies varied including quantitative (Fisher & Oster, 2017; Guthrie et al., 2018; Khan et al., 2019; Nyeo et al., 2016; Sousa et al., 2019), mixed-methods (Jansson, Ala-Kokko et al., 2013; Wolfensberger et al., 2018), qualitative (Goddard et al., 2018), and one meta-analysis (Jannson, Kaariainen et al., 2013). The discussion is organized of claims by interventional designs:

- Experimental to explore patient outcomes while gathering adherence rate data.
- Nonexperimental to explore barriers and facilitators of MV/P adherence.

Five quantitative studies used a quasi- or preexperimental approach. All researchers included an MDT-led EBP protocol or bundle. Except for Khan et al. (2019), the studies also

described staff education as an intervention (Fisher & Oster, 2017; Nyeo et al., 2016; Sousa et al., 2019). Guthrie et al. (2018) also identified role clarification as a key intervention. With varying levels, all studies reported an increase in adherence rates and an improvement of varied patient outcomes. Thus, researchers claimed the interventions increased both patient outcomes and adherence. Though this claim is consistent with guiding literature from SHEA (Klompas et al., 2014), these claims are limited. No study included statistical correlation data between adherence and patient outcomes. Three studies (Khan et al., 2019; Nyeo et al., 2016; Sousa et al., 2019) included multiple time intervals compared to the pre- and post-intervention measurements in two (Fisher & Oster, 2017; Guthrie et al., 2018). These series of data allow the researchers to evaluate the fluctuating rates of adherence and patient outcomes to infer an association. Fisher and Oster used two time points, limiting similar analyses.

Confounding factors may have also impacted patient outcomes. Patient health severities, seasonal illness prevalence, antibiotic practices, or staffing changes/turnover may have impacted patient outcomes (Timsit et al., 2017). Fisher and Oster (2017) emphasized the increase in staff knowledge and confidence because of the interventions, as evidenced by two staff surveys. This may have impacted the staff's ability to care for patients in distress, increasing patient outcomes though unrelated to adherence. Sousa et al. (2019) was the only study that attempted to factor for patient health severities using the SAPS scoring.

Limitations of the MV/T landscape continue to impact claims. These limitations include a lack of standardization for MV/T patient outcomes (Klompas et al., 2014; Mitchell et al., 2013). The collection of adherence data can be difficult to validly collect due to the Hawthorne effect (Polit & Beck, 2014) from direct observation (Guthrie et al., 2018; Sousa et al., 2019). Direct observation may also limit staff sampling based on researcher availability. The lack of staff

variety, (i.e., weekend, nightshift workers), may not fully represent the HCP population. Chart

reviews rely on staff to accurately self-report patient care (Fisher & Oster, 2017; Khan et al.,

2019; Nyeo et al., 2016). Lack of randomization of all studies and small patient populations

further limit claims while large sample sizes of Khan et al. (2019) ($n = 1,231$), Sousa et al.,

(2019) ($n = 828$) and Nyeo et al. (2016) ($n = 588$) are stronger.

Knowledge and non-knowledge factors impact MV/T adherence. Four studies used

either mixed-methods (Jansson, Ala-Kokko et al., 2013; Wolfensberger et al., 2018), qualitative

(Goddard et al., 2018), or meta-analysis (Jansson, Kaariainen et al., 2013). Two studies primarily

explored knowledge levels and/or how staff education impacted adherence. Goddard et al. (2018)

and Wolfensberger et al. (2018) used a broader approach to explore barriers and facilitators to

adherence rates.

Jansson, Ala-Kokko et al. (2013) and Jansson, Kaariainen et al. (2013) both examined the

impact of knowledge or education on adherence rates for VAP bundles. A meta-analysis,

including eight studies, claimed to identify a link between education and MV/T adherence

(Jansson, Kaariainen et al. 2013). Of eight articles, seven noted significant improvements in

patient outcomes, while the researchers listed five articles demonstrating a significantly

increased level of staff knowledge. Similarly, Jansson, Ala-Kokko et al. (2013) compared

outcomes of interest, including the level of staff knowledge and self-reported adherence among

three groups of nursing staff. In this study, significant differences in knowledge levels that were

higher in nurses with more than 5 years' experience did not correlate with adherence rates, noted

not to be statistically significant. Furthermore, focus study group interviews did not reveal

education to be a primary factor reported by participants. Though results varied, both studies

concluded more research is needed to understand the impact of education on MV/T adherence

(Jansson, Ala-Kokko et al., 2013; Jansson, Kaariainen et al., 2013). The results support this claim with varied findings. Confounding factors of behaviors related to adherence and limitations from included studies limit the findings of Jansson, Ala-Kokko et al. (2013) and Jansson, Kaariainen et al. (2013). The systematic review findings support the claim as included studies reporting significant increases in staff knowledge ($n = 5$) experienced significant improvements in patient outcomes ($n = 7$); however, this was not true for every included study (Jansson, Kaariainen et al., 2013). Also, without an objective measurement of knowledge, self-reporting may indicate "general knowledge of clinical practice guidelines" (Jun et al., 2016, p. 64) without detailed understanding allowing a transference to practice. Similarly, it would have been expected that results among education levels within the three groups of nurses (Jannson, Ala-Kokko et al., 2013) would have had similar levels of adherence. Again, this was not the finding. As claimed, more research, indeed, is warranted.

Wolfensberger et al. (2018) also used a mixed-methods design to explore factors impacting MV/T adherence rates. Rather than focus specifically on knowledge and education, the researchers utilized the broader BCW theory to assess for all facilitators and barriers after surveying nurses and physicians on adherence practices. Based on interviews, physical resources and environmental issues were primarily key barriers to adherence. This finding aligns with findings from Jansson Ala-Kokko et al. (2013) study. Based on these findings, Wolfensberger et al. (2018) concluded more non-educational interventions should be investigated. Wolfensberger et al. did not complete an objective assessment of knowledge, though knowledge deficit was not self-identified by the participants. A lack of objective measurement may skew the findings that the participants' knowledge levels did not impact adherence rates.

Goddard et al. (2018) used semistructured interviews to explore the HCP beliefs about barriers and facilitators to MV/T EBP specific to early mobility. This study focused on four discipline groups Also, using a more holistic framework like the BCW used by Wolfensberger et al. (2018), Goddard et al. (2018) used the TDF to categorize barriers and facilitators. Similar to Wolfensberger et al. (2018) and Jannson, Ala-Kokko et al. (2013), this study concluded primary domains included environmental contexts and resources while highlighting consequences and social factors as important domains of influence. Goddard et al. (2018) claimed little difference in response between the four disciplines but noted small variances indicate the importance of including a multi-disciplinary approach to EBP implementation. Goddard et al. (2018) was the only MV/T-specific, adherence-focused study to extend beyond nurses and physicians to include therapists and RT.

The literature demonstrates significant improvement in patient outcomes with EBP MV/T care, but adherence to the care impacts varying effectiveness. MV/T adherence has been correlated with educational deficits, thus, claiming the need for educational interventions. However, three studies using qualitative methods identified physical/environmental barriers and/or social factors to be important barriers to MV/T adherence (Goddard et al., 2013; Jannson, Ala-Kokko, 2013; Wolfensberger et al., 2018). Interestingly, as the participant groups expanded from only nurses (Jannson, Ala-Kokko et al., 2013) to nurses and physicians (Wolfensberger et al., 2018), to four HCP disciplines (Goddard et al., 2013), the influencing factors included professional or social influences. All studies concluded that more research is needed to understand better influencing factors for adherence with the intent to improve patient outcomes.

EBP adherence and competency extends beyond the MV/T population. A general gap in the implementation of EBP in health care exists, not unique to the MV/T subpopulation. Like

78

the MV/T-specific research on adherence factors, general EBP studies find multiple influencers with varying levels of impact. The majority of the reviewed literature focused on the nursing profession (Debano et al., 2017; Melynk et al., 2018; Shuman et al., 2019), most likely due to the primary presence of the patient's acute care bedside. Melynk et al. (2018) stated emphasis on the ability to transfer EBP into practice relied heavily on the nurse due to this critical role in care delivery. Three studies included a mix of HCP disciplines (Craig et al., 2017; Jun et al., 2016) or RN and MD (Curtis et al., 2017).

Like previously discussed MV/T literature, Melynk et al. (2018) claimed a link between EBP and education. However, rather than topic-specific, staff education, or in-services on hand hygiene or MV/T bundle care, Melynk et al. (2018) noted a correlation between EBP and academic degree held. Unlike Jansson Ala-Kokko et al. (2013), Melynk et al. found no correlation between EBP adherence and degree held. Researchers significantly identified advanced degrees as predictors of competency, EBP knowledge, mentors, and stronger beliefs ($p < .001$). However, Melynk et al. (2018, p. 18) measured self-reported competency of general EBP conceptual actions, such as "questions clinical practice" or "disseminates best practices supported by evidence." Melynk et al. (2018) acknowledge the prevalence of EBP concepts in higher degreed nursing programs. However, degree level may have impacted the participants' opportunity for such activities; therefore, lower degreed nurses by the bedside may not feel they participate in "integrating evidence . . . to plan evidence-based practice changes" (p. 18) whereas a higher degreed nurse leader or manager may have.

EBP competency and EBP beliefs ($r = .66$) and competency and mentoring ($r = .69$) were identified as strong associative relationships (Melynk et al., 2018). Both correlations support Melynk et al. (2018) claims regarding the importance of EBP mentorship and organizational

culture. The researchers note these findings align with previous research cited in the article. Goddard et al. (2018) also noted social factors such as mentorship, an influencing factor for EBP adherence. Causation cannot be determined by these correlational associations made by Melynk et al. (2018), nor is the relationship between EBP competency and adherence to established EBP protocol understood. However, the researchers claimed there was a relationship between competency and education, beliefs, and social influence.

Jun et al. (2016) utilized a meta-analysis review to identify various factors influencing EBP implementation. The researchers claimed both internal and external factors were evident in a systematic review of 16 articles regarding EBP. Researchers noted attitudes and/or beliefs and knowledge were the most frequently cited internal influencers to EBP implementation. Primary external barriers included an understanding of EBP guidance, resources, leadership, and organizational culture. Jun et al. found social factors were an important finding throughout the literature, including nurse empowerment, peer endorsement, and MDT collaboration. Though these findings align with other literature noting EBP influencers, the claim is weakened through the inability to determine methodologies used in the studies.

Shuman et al. (2019) noted a lack of research regarding the impact of social influence on EBP. Thus, the researcher explored self-reported and staff nurse perceptions of leadership behaviors aligning with EBP promotion. Like Melynk et al. (2018), Shuman et al. (2019) claimed subpar levels of EBP competency existed based on general EBP knowledge of principles. Leadership traits and culture characteristics such as "proactive leadership" and "recognizes staff for EBP" were collected. Shuman et al. (2019) claimed results might provide information to guide strategies, such as promoting EBP through recognition efforts or including questions specific to EBP competency in interviews. Though these claims are supported through

reportedly valid tools, like Melynk et al. (2019), it is unclear how general EBP competency knowledge may transfer to the ability to adhere to EBP guideline protocols or practice.

Social domains emerge as common theme for adherence influence. Using the TDF as a validated and simplified behavioral framework, four studies explored EBP implementation barriers and facilitators (Curtis et al., 2017; Craig et al., 2017; Debano et al., 2017; Goddard et al., 2018). Except for Debano et al. (2017), these studies include RN and other HCP disciplines. Goddard et al. (2018) was the only study to target MV/T EBP protocol specifically. All claim social domains, as defined by TDF, acted as influencers to EBP adherence.

Curtis et al. (2017) used a mixed-method design to survey adherence, influencers to blunt chest trauma protocol, and design specific interventions to promote adherence among all ED staff. Staff HCP disciplines were not defined but included at least representation from RN, MD, and RT groups based on information from the article. Mapped to the TDF and BCW, researchers claimed simplification of the guideline, education, training, enablement was needed to increase the 64% adherence rate. Interventions targeted to address eight TDF domains (Curtis et al., 2017). Guideline simplification was noted by the researchers to address workload and lack of time or resources. Education, training, role-modeling, and offering social support was used to empower nurses, particularly new nurses who may have lacked the confidence to activate the protocol as warranted (Curtis et al., 2017). Finally, researchers addressed the motivation and opportunity of the staff through education, reminders, and manager support. Researchers claimed this study demonstrates how interventions can be designed based on BCW to improve patient outcomes. After four months, adherence was measured again at 91%, supporting this claim.

Craig et al. (2017) used a qualitative, focus group study of RN, ST, nurse managers, and various levels of MDs to explore influencers of stroke protocol adherence. Researchers mapped

results to 13 of 14 TDF domains. Researchers then mapped to BCW interventions to redesign the protocol claiming the process was successful. Craig et al. (2017) note a lack of BCW guidance for social domains, though social/professional role and social influence TDF domains were noted in this study as influencers, claiming more research is needed. The researcher does not describe the relaunch, and the reevaluation of the new plan limited this ability to test the claim. Furthermore, the researchers note the limitation of the BCW, citing no validation of the tool to create an interventional design (Craig et al., 2017). Rather, Craig et al. (2017) stated BCW intervention selection was "researcher opinion" (p. 15) but feels expertise warrants the use described.

Debano et al. (2017) claimed environmental context/resources and social/professional roles were primary barriers for the adherence to a new EBP charting system at two Australian hospitals. Using a qualitative study informed by TDF, the researchers identified nine domains described by the participants with the most responses correlating with resources and social identity. Researchers claimed resources align with previous literature while the findings regarding social roles infer more research should be completed to explore how nurse judgement impacts adherence to the new electronic charting methods. Nurse judgement, as the researchers describe, relates to the social/professional role of the nurse, though nurses must prioritize tasks he/she feels is best for the patient. Thus, conflicting or competing tasks, charting versus patient care, may threaten the social/professional role of the nurse, creating a barrier to charting. Debano et al. (2017) acknowledge the overlap of domains with many responses and mapping to TDF incurs judgement from the researcher.

Goddard et al. (2018) claimed TDF social domains, not previously described thoroughly in literature, were prominently noted as influencing factors preventing the adherence to EBP

recommended practices in the MV/T patient group. With a qualitative study, the researchers

interviewed various U.S. and Canadian HCPs to explore barriers and then mapped the barriers to

the TDF. The grounded theory approach allowed the researchers to explore barriers through an

in-depth data collection process (Creswell, 2011). However, the sampling from an online forum

may not represent the general HCP population, potentially introducing bias (Polit & Beck, 2004).

Direct quotes from participants included in the study demonstrates encouragement or

discouragement from peers, which may support the claim that social factors are important

factors. Researchers noted 135 beliefs with the highest number aligning with the

social/professional role and identity domain as assigned by researcher "expert consensus groups"

(Goddard et al. 2018, p. 3). Though the qualitative methodology prevents generalizability, claims

of social domain importance to EBP adherence are supported (Creswell, 2011; Polit & Beck,

2004).

Quantitative studies in the reviewed literature are limited based on confounding patient

variables. However, these studies echo larger landmark guidelines from SHEA (Klompas et al.,

2014) stating EBP improves patient outcomes, and without adherence, improved patient

outcomes are limited. Similarly, claims that various factors impact adherence is found

consistently in the literature despite varied study designs with differing and overlapping strengths

and weaknesses (Johnson & Onwuegbuzi, 2004). Claims of social-specific influences are fewer

within the literature, weakening claims (Goddard et al., 2018); however, a lack of literature

exploring the MV/T patient population has been identified (Goddard et al., 2018; McConnell et

al., 2016). Though not formally informed using the TDF, raw data provided in the form of

participant quotes (Wolfensberger et al., 2018) or role clarifying interventions (Guthrie et al.,

2018; McConnell et al., 2016) further support the emerging theme of social influences on EBP

adherence within the diverse MDT caring for the MV/T population.

Chapter 2 Summary

The MV/T population includes almost one million Americans per year (Bonvento et al.,

2017; McConnell et al., 2016). Preventable complications, including the most common and most

lethal hospital-acquired infection, VAP, occur at staggering rates resulting in poor patient

outcomes and increased healthcare costs and resources (Guthrie et al., 2018). Due to the

significance of the problem, the CDC, SHEA, and AAOHNS (Klompas et al., 2014; Mitchell et

al., 2013) have analyzed, synthesized, and published clinical guidelines based on up-to-date EBP

demonstrated to reduce complication rates and improve patient outcomes effectively.

Unfortunately, barriers to EBP adoption, implementation, and adherence are widespread and not

specific to the MV/T population (Jylha et al., 2017). Multiple approaches have been used to

frame research exploring implementation strategies, including classical, behavioral approaches

(Tucker, 2019). Barriers to the numerous behavioral approaches in healthcare research are the

complexities and overlapping nature of these theories, not typically native to the researchers in

healthcare (Miche et al., 2005). Miche et al. (2005) created a comprehensive and simplified

behavioral framework, later updated and validated by Cane et al. (2012), that has now been

successfully utilized in HCP behavioral changes and cited in over 800 articles (Atkins et al.,

2017). This framework, TDF, includes 14 domains of influence that facilitate or hinder evidence-

based practice in the healthcare setting (Cane et al., 2012).

Studies using TDF to explore nonspecific EBP found varied domains of influence to

adherence, aligning with general EBP literature. Yet, studies framed with TDF noted strong

influencers mapped to the social domains, *social influence* and *social/professional role and*

identity (Craig et al., 2017; Curtis et al., 2017; Debano et al., 2017; Goddard et al., 2018). A paucity of research exists specific to the social domains influencing EBP adherence (Goddard et al., 2018).

Because of the emphasis on a multidisciplinary approach for the MV/T patient (Klompas et al., 2014; Mitchell et al., 2013), social domains may be an important influencer to EBP adherence. However, this literature review only identified one study using TDF to explore EBP adherence in MV/T, and in fact, did note social domains as the greatest influence among all other TDF domains (Goddard et al., 2018). Other MV/T studies within the literature review found factors influencing EBP that may align with TDF social domains like: a) shared duties, decision making, or role ambiguity between RN, MD, and RT (Abode et al., 2016; Guthrie et al., 2018; Klompas et al., 2013; McConnell et al., 2016; Southcott et al., 2019; Welton et al., 2016); b) peer or leader support (Klompas et al., 2014; McGrath et al., 2017; Wolfensberger et al., 2018); and; c) HCP empowerment (Fisher, & Butler, 2017; Khan et al., 2019; Mah et al., 2017). Thus, more research is needed to explore the impact of TDF social domains on EBP adherence in the MV/T.

Upon review of the literature a conceptual framework was developed that adapted the TDF (Cane et al., 2012). Evidence supports this framework illustrating the potential impact EBP has on MV/T patient outcomes. However, EBP effectiveness is influenced by HCP adherence to EBP. This framework emphasizes MV/T overlap (Abode et al., 2016; McConnell et al., 2016; Southcott et al., 2019), which may contribute to EBP adherence (Debano et al., 2017; Goddard et al., 2018; McConnell et al., 2016). Based on the literature, there is sufficient evidence to support exploring the impact of TDF social domains as primary influencers on MV/T EBP adherence to identify significant findings. As a result, the literature review supports the following research questions (RQs):

- RQ1a: What EBP actions overlap between primary MV/T HCPs?

- RQ1b: What EBP expectations overlap between primary MV/T HCPs?

- RQ2: How do the HCPs perceive overlap of actions and expectations between primary MV/T HCPs impacts EBP adherence?

- RQ3: How can the TDF social domains inform the findings from primary MV/T HCPs regarding overlapping EBP actions and expectations to contribute to the growing body of knowledge to support HCP transformational change?

Chapter 3: Methodology

Introduction

For some, breathing requires medical intervention to sustain life. Whether acute or long-term, invasive intubation with endotracheal or tracheostomy presents significant risks to the individual (Wagner et al., 2018). Fortunately, research-based guidance, or evidence-based practice (EBP), exists to guide healthcare professionals (HCPs) in the delivery of care to optimize patient outcomes (Klompas et al., 2014; Mitchell et al., 2013). However, barriers exist preventing the translation from the research to changed and sustained, or transformation, of HCP behaviors (Charlesworth et al., 2016; Jun et al., 2016; Morris & Faulk, 2012). Existing literature utilizes varied theories or frameworks, with one framework, Theoretical Domain Framework (TDF), noted as a primary tool for healthcare provider (HCP) behavioral change (Atkins et al., 2017; Cane et al., 2012). Though only one study identified in the MV/T-specific literature review utilized TDF, an emerging theme of TDF social influences as defined by the TDF was observed. In alignment with literature review findings, and the importance of social context for transformational change, more research is warranted to explore how social factors as defined by the TDF may influence EBP adherence in the MV/T population through the exploration of the following research questions (RQs):

- RQ1a: What EBP actions overlap between primary MV/T HCPs?

- RQ1b: What EBP expectations overlap between primary MV/T HCPs?

- RQ2: How do the HCPs perceive overlap of actions and expectations between primary MV/T HCPs impacts EBP adherence?

- RQ3: How can the TDF social domains inform the findings from primary MV/T HCPs regarding overlapping EBP actions and expectations to contribute to the growing body of knowledge to support HCP transformational change?

The purpose of this chapter is to review the research questions and purpose of the study while presenting the study's design and methodology. This chapter describes the case study design and details the specific components of the methodology. Similarities between this presented study and studies within the literature review and/or research methodology references are noted throughout this chapter. The chapter is organized to include a review of the research questions, supporting information, overall study design, and individual methodology components.

Research Questions

The implementation and adherence to *evidence-based practice (EBP)* in the healthcare setting are essential to optimizing patient care and outcomes (Jylha et al., 2017). Changing the behavior of healthcare professionals is complex and is riddled with barriers (Jun et al., 2016; Miche et al., 2005). HCPs caring for patients with an invasive artificial airway, with or without MV, have demonstrated, through clinical studies, difficulty in adhering to recommended EBP tasks (Abode et al., 2016; Nyeo et al., 2016). The goal of this study, through the exploration of research questions, is to contribute to the body of knowledge to support transformational leadership in support of HCP behavioral change. This discussion will summarize the literature providing evidence of the problem, its significance, and the research questions aimed to address this topic.

Review and significance of the topic and problem. MV/T patients are at a high risk of complications, including VAP (Klompas et al., 2014). VAP is the second most common, and the

most lethal, hospital-acquired infection (Guthrie et al., 2018; Klompas et al., 2014; Timsit et al., 2017). This respiratory infection directly associated with the use of invasive intubation occurs at a range of 5%–67% of all intubated patients (Timsit et al., 2017). Other preventable harms occur at an estimated rate of up to 75% for this vulnerable population (Southcott et al., 2019). Complications can range from skin breakdown (Dixon et al., 2018) to respiratory failure and/or death (Welton et al., 2016).

Fortunately, ample research has been completed to support collaborated, synthesized guidelines for the MV/T population, comprising EBP (Klompas et al., 2014; Mitchell et al., 2013). Large, guiding organizations such as the Centers for Disease Control and Prevention (CDC) recommend multidisciplinary, EBP tasks to decrease the risk of preventable harm (Klompas et al., 2014; Mitchell et al., 2013). However, despite the body of research supporting efficacy of MV/T EBP tasks, lack of consistent EBP adherence by the primary healthcare providers (HCPs), adherence levels have been identified as a barrier to optimal patient outcomes (Klompas et al., 2013; Jansson, Kaariainen et al., 2013; Jylha et al., 2017; Nyeo et al., 2016). The definition of *adherence* for the context of this study is the adoption and/or sustainment of behaviors aligned with selected EBP synthesized evidence (Jylha et al., 2017).

To address the issue of non-adherence in the MV/T population, researchers have explored barriers to EBP (Tucker, 2019). Researchers have identified various barriers to EBP adherence including lack of knowledge (Jansson, Kaariainen et al., 2013), lack of leadership support (Shuman et al., 2019; Melynk et al. 2018), lack of resources (Jun et al., 2016), or individual motivators like personal beliefs (Jansson, Ala-Kokko et al., 2013). Overcoming barriers to facilitate HCP behavior change to align with EBP, particularly in today's complex healthcare

environment, requires a transformational process (Charlesworth et al., 2016; Roberts et al., 2016).

The Theoretical Domains Framework (TDF) (Miche et al., 2005) addresses complex behavioral change within the healthcare discipline. This model was designed to allow healthcare researchers to utilize a simplified behavioral model, much different than more traditional social science theories (Atkins et al., 2017). Since its development in 2005, the TDF has been successfully used to address many EBP issues (Atkins et al., 2017).

In a review of the literature, only one study specific to MV/T EBP used the TDF model (Goddard et al., 2018). This study identified factors influencing EBP strongly related to the two social domains, *social influence* and *social/professional roles and identity* (Goddard et al., 2018). Though other MV/T EBP studies were not framed using the TDF, a review of the results found many identified factors that may correlate with these social domains utilizing the TDF definitions (Atkins et al., 2017). These include:

- Shared duties, decision making, or role ambiguity between RN, MD, and RT (Abode et al., 2016; Guthrie et al., 2018; Klompas et al., 2013; McConnell et al., 2016; Southcott et al., 2019; Welton et al., 2016);

- Impact of peer or leader support (Klompas et al., 2014; McGrath et al., 2017; Wolfensberger et al., 2018) and;

- Feelings of HCP empowerment (Fisher & Oster, 2017; Khan et al., 2019; Mah et al., 2017).

Social domains may be important to the MV/T population due to the multidisciplinary needs of the MV/T patients. Clinicians treating this population include a wide variety of healthcare professionals to meet the holistic needs of the MV/T patient. Among the primary

HCPs, the roles of the RN, RT, and MD overlap in duties and expectations (Abode et al., 2016; McConnell et al., 2016; Southcott et al., 2019).

Finally, social contexts are important factors in the process of transformational change (Mezirow, 1991). Transformational success is "more sociological than technological" (Charlesworth et al., 2016, p. 166), taking place among a larger group of peers or family (Mezirow). During the change, individuals evaluate other's reactions for acceptance or rejection. This social acceptance is key in reaffirming and reinforcing continued change (Mesirow). Hence, transformational change theories support the importance of social factors on sustaining change.

In reflection of the significance of the problem and the presented evidence, more research is warranted to explore how social factors, as defined by the TDF, may influence EBP adherence in the MV/T population. In turn, this literature supports the following research questions to contribute to the body of knowledge:

- RQ1a: What EBP actions overlap between primary MV/T HCPs?

- RQ1b: What EBP expectations overlap between primary MV/T HCPs?

- RQ2: How do the HCPs perceive overlap of actions and expectations between primary MV/T HCPs impacts EBP adherence?

- RQ3: How can the TDF social domains inform the findings from primary MV/T HCPs regarding overlapping EBP actions and expectations to contribute to the growing body of knowledge to support HCP transformational change?

Based on the questions and literature, the most appropriate study design is a qualitative case study. This design allowed the exploration of one facility's experience with the phenomenon of TDF social factors influencing MV/T EBP adherence due to the overlapping of the three primary HCPs. Though such a case study design does not allow for generalizability, the objective, rather,

is to understand a facility's unique experience to determine emerging themes from the data (Creswell, 2011). The overall objective will be to contribute knowledge to the discipline for the overarching goal leading to strategies targeted to support transformational change towards EBP in MV/T HCPs. The following sections of this document detail the summary of the case study design and then an individualized description of each methodology component.

Purpose and Design of the Study

  Purpose and significance of the study. This study adds significant information to the transformational education and leadership body of knowledge to support the implementation and sustainment of healthcare provider EBP through the exploration of how social factors, as defined by the TDF, in the MV/T population. The impact resulting in improved patient outcomes (Khan et al., 2019; Mah et al., 2017; McGrath et al., 2017; Nyeo et al., 2016; Sousa et al., 2019). Adherence, requiring complex, transformational change by the HCPs, is largely associated with social factors (Miche et al., 2005; Mezirow, 1991), particularly due to the multidisciplinary MV/T patient needs (Klompas et al., 2014; Mitchell et al., 2013). By addressing the research questions, the study goal was achieved, which included adding information to the larger body of knowledge. The significance of the RQs lies within the complications resulting from a lack of adherence to EBP within the MV/T population.

  Each year, 105 million people undergo intubation with an endotracheal or tracheostomy tube (WHO, 2017). All at varying degrees of risk for complications with many being of vulnerable subgroups like the elderly (Guthrie et al., 2018). Complications range from skin breakdown (Dixon et al., 2018) to lethal infections like ventilator-associated pneumonia (VAP) (Klompas et al., 2014). Many of these complications are preventable by HCPs following recommended EBP (Jun et al., 2016). Health professionals must protect the health of patients;

92

yet, despite existing EBP research and guidance, non-adherence to EBP is prevalent (Jun et al., 2016). Much research has been conducted, creating an emergence of frameworks and theories (Miche et al., 2005; Tucker 2019). Using one framework, TDF, a theme of social influence has emerged in the MV/T adherence literature (Goddard et al., 2018), aligning with transformational theories noting social influences are key to changing and sustaining perspectives, thus behaviors, in adults (Mezirow, 1991).

A paucity of literature exists attempting to study social factor influences in HCP adherence to MV/T. Only one study has been identified to date (Goddard et al., 2018). Based on results from existing MV/T EBP adherence literature, social influences were present based on a retrospective review of the published data using the TDF domain definitions (Lipworth, Taylor, & Braithwaite, 2013). These EBP adherence factors aligning with TDF social domains include:

- Peer or leader support (Klompas et al., 2013; McGrath et al., 2017; Wolfensberger et al., 2018);

- Shared duties, decision making, or role ambiguity between RN, MD, and RT (Abode et al., 2016; Guthrie et al., 2018; Klompas et al., 2014; McConnell et al., 2016; Southcott et al., 2019; Welton et al., 2016), and;

- HCP empowerment (Fisher, & Butler, 2017; Khan et al., 2019; Mah et al., 2017).

The aligned findings, coupled with the overlap in multidisciplinary HCP care (Guthrie et al., 2018; McConnel et al., 2016), support the need to conduct a study to further contribute to the existing body of knowledge to better understand social factors, defined by the TDF, that may influence MV/T EBP adherence for transformational change.

Case study design rationale. To date, the literature presents a lack of MV/T research specific to the research questions posed. Though research demonstrates ample data

demonstrating a lack of EBP in MV/T (Fisher & Oster, 2017; Khan, 2018; Timsit et al., 2017; Welton et al., 2016) and a variety of EBP influencers (Guthrie et al., 2018; Jansson, Ala-Kokko et al., 2013; Jannson, Kaariainen et al, 2013; Wolfensberger et al., 2018), there is little data or detail documenting overlapping HCP roles and expectations (Goddard et al., 2018; McConnell et al., 2016), how this overlap impacts adherence to EBP tasks, and the presence of other social influences framed by the TDF (Goddard et al., 2018). The following section describes how a case study design may best address each research question.

RQ1a/b asks *what MV/T EBP actions and expectations overlap between primary MV/T HCPs*. This addresses the specific roles between the RN, RT, and the MD. The case study allows an in-depth review of shared experiences from multiple individuals within defined boundaries (Heale, 2018), or "the existence of a single reality" (Yin, 2014, p. 16). Regulatory laws and professional regulations govern professional scope of practice and general conduct (REDACTED Department of Health Professions, 2019). However, specific tasks, responsibilities, and HCP behavior are a result of multiple influences such as these regulations as well as facility policies, organizational culture, and available resources (Lipworth et al., 2013; McConnell et al., 2016). The boundaries outlined in a case study design, for example, within one healthcare facility, appropriately allow for the collection of data from the three primary HCP groups with shared facility policies and organizational culture. Particularly, the case study design facilitated the exploration of participant perception of role and expectation related to the EBP tasks. Additionally, the methods collected multiple sources of data for validation (Creswell, 2011).

RQ2 asks *how HCPs perceive overlap to impact EBP adherence*. The case study design included semistructured interviews to explore RQ2 (Yin, 2014). Varied data collection such as images of tracked patient outcome posters and a leadership interview facilitated validation of

participant interviews (Creswell, 2011). Additional data as described provided objective evidence of adherence.

RQ3 explores *how this information may be structured using the TDF social domains to further contribute to the growing body of knowledge needed to support transformational behavior change*. The qualitative case study's data was organized into themes for analysis (Creswell, 2011) and then matched to the TDF domains using empirical definitions (Atkins et al., 2017; Lipworth et al., 2013). TDF categorization and discussions for practice implications in chapters 4 and 5 successfully answer RQ3.

Thus, the aim of this qualitative study was to explore one southeastern U.S. critical care hospital experience with EBP adherence. Based on the interdisciplinary and overlapping roles described, the three selected primary HCPs disciplines included MD, RN, and RTs. The researcher used convenience sampling to select 14 HCPs for semistructured interviews using an instrument created for this study. An abbreviated, yet similar, instrument guided a semistructured interview with the critical care manager to explore varied perspectives on the same areas of interest. Finally, other sources of objective data included a review of policies and images of patient outcome trackers. Data collected were organized based on the TDF domains and analyzed for conclusions and implications for practice and further research.

Validity of study in relation to previously conducted research. Chapter 2 includes an in-depth literature review of related studies within the topics of MV/T and EBP adherence. Study types are varied throughout and can be organized generally by outcomes of interest. This section provides a summary of study methods by general research design.

Researchers attempting to understand the impact of EBP on patient outcomes utilized quantitative designs. These studies varied in levels of experimental qualities including quasi-

experimental (Mah et al., 2017; McConnell et al., 2016; Sousa et al., 2019; Southcott et al., 2019) and preexperimental (Abode et al., 2016; Dixon et al., 2018; Fisher & Oster, 2017; Guthrie et al., 2018; Khan et al., 2019; McEvoy et al., 2017; McGrath et al., 2017; McKeon et al., 2018; Nyeo et al., 2016; Welton et al., 2016). Most of the studies included in the literature review included a quantitative methodology. These study types allowed researchers to better understand a cause and effect relationship between the variables of interest with objective measurements (Mertler, 2005). This method is very effective these types of questions and lends to varying levels of generalizability (Mertler), a quantitative design would not appropriately address the more exploratory nature of the research questions posed in this study.

Several articles in the literature review utilized mixed-methods (Curtis et al., 2108; Jannson, Ala-Kokko et al., 2013; Jannson et al., 2018; Wolfensberger et al., 2018). This practical approach also facilitated the objective examination of selected cause and effect relationships like the quantitative studies, while researchers explored more subjective topics of interest such as perceived beliefs or barriers of EBP adherence (Curtis et al., 2018). The mixed-method approach applies an overlapping strategy to capture the benefits of both quantitative and qualitative design (Johnson & Onwuegbuzie, 2004). However, the research questions posed in this study do not require intervention or intention to measure cause and effect as included in similar mixed-method study designs in this literature review (Curtis et al., 2018; Wolfensberger et al., 2018). Therefore, this design does not best facilitate addressing the three research questions posed in this study.

Two articles in the literature review included recent research studies using a qualitative design (Craig et al., 2018; Goddard et al., 2018). Craig et al. (2018) used a case study approach, while Goddard et al. (2018) utilized a case study approach. Neither study sought to understand a

cause and effect relationship, rather understand factors that impacted EBP tasks of interest (Craig et al., 2018; Goddard et al., 2018) and in an attempt to develop strategies to improve adherence (Craig et al., 2018). This open-ended design allowed the researchers to explore the shared experiences and perceptions of like-participants. Results in the form of themes were then organized to allow interpretation and a generalized understanding of what might apply to other like-kind populations (Creswell, 2011).

Furthermore, both researchers utilized the TDF to frame the studies. This common framework assists in providing a common "theoretical lens to view cognitive, affective, social, and environmental influences on behavior" (Atkins et al., 2017) to view. In addition to previously documented successes in using the TDF in successful healthcare behavioral change, over 800 articles have been cited using the TDF (Atkins et al., 2017). Several studies (Craig et al., 2017; Curtis et al., 2017; Debano et al., 2017; Goddard et al., 2018) within this literature review also utilize the TDF; however, only one is specific to MV/T (Goddard et al., 2018). The common language of the TDF, though limited in this MV/T population to date, gives support to add to the knowledge base with the intent to allow others to utilize this research to promote further development beyond this study. In summary, this literature supports the study design and use of the TDF as a conceptual framework to inform the data analysis and interpretation.

Much of the recent literature reviewed in this literature review included practical research in an attempt to explore action-based scenarios such as the impact of oral care on VAP rates (Guthrie et al., 2018) or the impact of education on adherence rates (Jansson, Ala-Kokko et al., 2013). Thus, these studies appropriately utilized either quantitative or mixed-method designs best-suited to understand the relationships between variables. This action-based research is critical based on the impact of the problem on patient health.

However, theoretical research was also noted in the literature review (Cane et al., 2012; Miche et al., 2005). Miche et al. (2005) was the seminal author to develop the TDF in response to the complex nature of multiple and overlapping behavioral theories otherwise too complex to utilize by healthcare researchers unfamiliar with social constructs. This work, later revised and validated by Cane et al. (2012), provided healthcare researchers with a simplified framework to apply behavioral theories without extensive expertise in social disciplines, essentially decreasing barriers to healthcare/behavioral topics. Since 2005, the TDF has been utilized in HCP and patient behavioral strategies (Atkins et al., 2017).

Qualitative studies included in the literature review are mostly conceptual. These studies explored the ability to apply the TDF or other concepts to assist in the framing data meant to explore adherence barriers and facilitators (Craig et al., 2017; Curtis et al., 2017; Debano et al., 2017; Goddard et al., 2018). These studies did not target specific interventions and outcomes, but rather, attempted to explore the general experience of the participants to understand and/or begin framing strategies. In review of the literature, this conceptual approach is appropriate to address the selected research questions.

Summary of purpose and design. In all, the literature review yielded a wide variety of literature in design and type. In review, these study designs categorically aligned with the type of research questions or study objectives. Like these articles, the study mirrored similar designs (Craig et al., 2018; Goddard et al., 2018), to explore participant experiences in-depth. The selected research questions have not been thoroughly addressed within the selected MV/T population. Thus, this methodology met the study objectives and addressed each RQ.

Research Population and Sampling Method

      Rationale for population and sampling methods. To address the RQs posed in this study, and in alignment with the case study design, convenience sampling was utilized. This discussion is organized based on the facility of choice, specific environment, and the sampling methods. Comparison of sampling methods used in the literature review follows.

      The selected site was a 200-bed, acute care facility in southeastern U.S. In addition to general acute care capabilities, this facility includes an emergency center, multiple operating suites, a critical care unit, and an intermediate step-down care unit. Intubated patients are localized to critical care, emergency, and operating environments. However, due to the reduced care from nursing or respiratory personnel in the operating environment (OR), this setting will be excluded from the environment and population. Similarly, the emergency department (ED) often lacks continuity of HCP staff due to the limited time spent in that environment before transferring to an in-patient unit. Thus, only the critical care unit was included in this study.

      This critical care unit has a 20-bed capacity. The study included a convenience sampling of all three primary HCP disciplines, including the sub-discipline of nursing to include unlicensed assistive personnel (UAP), with regular interaction with MV/T patients. *Regular* was defined as at least one MV/T patient per month. To ensure varied representation of clinical experiences, the sampling included HCPs from the morning (AM) and evening shifts (PM) to account for potentially different experiences between the two primary shifts. The initial goal was to include 16 participants, four from each discipline to equally represent the HCP groups. The expectation was that 16 participants would represent about 50% of the estimated 20 full time staff. However, based on reduced patient census, decreased staff were available during the shifts of data collection. Thus, the principle researcher utilized convenience sampling of any available

staff, which resulted in an uneven ratio of HCP discipline representation. Inclusion of

participants is detailed in Chapter 4. Despite a deviation from the original plan, the final sample

was more representative of the average staffing matrix, with RNs representing most staff

supported by one UAP, MD, and RT each. Based on a high inclusion rate and the distribution of

HCP group representation, the principle researcher deemed the sampling appropriate to meet the

study's objective. Finally, to be discussed in more detail later in the section, participants will be

required to care for at least one MV/T patient per month to control for infrequent experience with

the selected patient population (Suter, 2012).

Creswell (2011) emphasizes the importance of selecting a site that represents the

environment of interest as well as a site that the researcher has adequate access. This site is

familiar to the researcher who previously worked in a collaborative educator role among enrolled

nursing students 5 years ago. In this role, the researcher was an employee of the community

college with the weekly responsibility of supervising nursing students on-site on the post-

operative unit caring for patients. This previous association facilitated strong professional

relationships with former students and currently employed nurses, as well as continued

administrators and employees throughout the hospital. These relationships facilitated permissions

required to contact critical care staff and seek participants.

"Backyard" (Creswell, 2011, p. 153) studies are discouraged in case study research.

These include studies that are conducted by a researcher who is currently employed or associated

with the study site. Biases can occur, including an authority or power imbalance between the

researcher and participants (Creswell). Also, Creswell (2011) notes, the researcher may risk

retaliation and/or severance from the employer if perceived negative results are found. However,

strong validation tactics during analysis strengthen backyard research (Creswell). Due to the time

passed from the researcher's association the risk of power imbalance is less. However, steps to reduce this potential bias were executed.

Recruitment was conducted using word of mouth from the charge nurse and manager. Participants were not informed of the researcher's name to limit bias based on previous experience as an educator over former students. Gift cards, $5 value, to the local coffee shop were advertised as incentive. Interested potential participants were referred to the primary researcher, located in a small, private, conference room near the break room for more information. Introductions, details of the study, and a review of inclusion criteria were reviewed. Inclusion criteria included regular care of a MV/T patient, at least once per month, and working in the role of one of the three primary HCP groups (Table 2).

Table 2

Participant Information for Inclusion Consideration

Name	Please select one that best describes your role, shift, and experience with intubated or tracheostomy patients.
Identify Role	MD RN UAP RT
Identify Primary Shift	AM PM
Do you care for intubated patients or a patient with a tracheostomy at least once a month?	YES NO
Would you allow the researcher to follow up via telephone if additional questions arise? (N*ot a requirement for inclusion*).	YES NO

Participants meeting the inclusion criteria were enrolled after informed consent was reviewed to include "participant rights, study's purpose, confidentiality, known risks, expected benefits, and with the participant's signature" (Creswell, 2011, p. 153). Though not required for enrollment, the researcher asked permission for follow up after data collection. All eligible staff were targeted based on the convenience sampling approach. Chapter 4 details participation rates.

Based on the case study design and the intention to deeply understand the phenomenon unique to this critical care facility, these methods and sampling were appropriate. Creswell (2011) supports the use of a facility and participants who are accessible and willing to share his/her experience. Case study data collection requires intense researcher time and effort (Creswell); therefore, the population must be reasonable for time and resources. Resource restriction, though, must be balanced with the need for adequate data. Creswell notes the importance of gaining multiple sources of data, which can include participant perspectives from interviews, on one topic or theme. This allows a triangulation in the analysis to increase the validity of the data gathered and analyzed (Creswell). Additionally sources of data included an interview with the nurse manager, using a similar tool, as well as objective data including images from the unit patient outcome tracker and existing policies.

Furthermore, this population and sampling method mimics other identified case studies in the literature review with some notable differences (Craig et al., 2018). Craig et al. utilized a case study design to describe the strategic implementation of a program aimed to increase EBP adherence using the TDF. The researchers conducted 13 workshops, or focus groups, of five to 11 participants. Though a total of 105 participants, 13 focus groups were the smallest sub-unit of data (Yin, 2014). Each subunit consisted of four primary HCP groups including RN, MD, therapists, and managers. Researchers accumulated enough data to achieve the stated goal of the study through the organization and analysis of the data. Goddard et al. (2018) used a similar population, gathered by purposeful sampling, to interview four HCP disciplines regarding barriers to MV/T EBP specific to mobility. Similarities of these published studies and the study strengthen the methods conducted.

Though only two articles utilized a case study design, these qualitative studies utilized similar population and sampling techniques. The following section will review population methods through the literature. Though, based on case study design (Creswell, 2011; Yin, 2014), and in alignment with the literature (Craig et al., 2018), the study population and sampling is sound and facilitated the achievement of the study goals.

Review and comparison of literature population and sampling methods. The researcher identified three primary themes in the literature review. Themes comprised: (a) MV/T EBP impact on patient outcomes, (b) adherence challenges, and (c) the emerging theme of TDF social influences in EBP studies. Based on the objectives of the studies, population and sampling methods varied. These themes and impact on population and sampling methods will be discussed individually.

MV/T EBP impact on patient outcomes. Quantitative studies seeking information on the impact of EBP on patient outcomes included patients receiving mechanical ventilation of tracheostomy care. The populations varied based on the clinical setting, which groups patients with similar characteristics such as age or primary medical condition. For example, one study was conducted throughout a pediatric hospital; thus, all participants were below the age of 18 years old with varied conditions requiring mechanical ventilation or tracheostomy care (McEvoy et al., 2017). Another study conducted in an adult critical care unit included patients above the age of 18 years old with conditions requiring high acuity care with intubation needs (Sousa et al., 2019). Thus, the population was limited to MV/T care and the study setting.

Because potential MV/T needs are not limited to a specific group or age, the variety in population settings and ages suits the need to understand how EBP impacts patient outcomes to generalize to any patient subgroup. Hence, the variety of settings and populations throughout the

literature review is beneficial to the healthcare discipline. Of most importance for population

selection and sampling in these quantitative, experimental studies exploring patient outcomes

was the ability to objectively compare dependent variables between population groups by

limiting potential bias, and therefore, increasing generalizability to larger groups (Mertler, 2004;

Polit & Beck, 2004).

Unfortunately, the ability to execute a true experimental design, requiring randomization

of the population (Mertler, 2004) can be a challenge within the MV/T population (Klompas et

al., 2014). Researchers are restricted to the available patient population requiring MV/T care, and

based on healthcare setting, the MV/T population may be limited. Ethically, healthy patients

cannot be recruited to volunteer for intubation due to the health risks associated. Further, time

and resources may limit the ability for researchers to add additional settings or expand the

timeframe to increase the population pool. Therefore, a small patient population can prevent the

ability for researchers to randomize participants.

In the literature review completed, only one study (McConnell et al., 2016) utilized

random sampling. Other studies, for purposes stated above, included convenience sampling

based on inclusion/exclusion characteristics. Though randomization was not feasible, other

methods were used in these quasi-experimental studies to control confounding variables (Mah et

al., 2017; McConnell et al., 2016; Sousa et al., 2019; Southcott et al., 2019). These will be

discussed later through the analysis of data.

Barriers to EBP adherence and emerging theme of TDF social influences. The next

two themes of EBP adherence and the emerging theme of TDF social influences utilized a mix of

qualitative or mixed-methods to achieve research objectives. Researchers of these studies

targeted behaviors, knowledge, or beliefs of the HCPs. Therefore, the general population of

interest included the HCPs rather than patients or clients. Due to the similarities of population and sampling selection among these two themes, sampling methodologies will be discussed together.

To achieve study objectives of exploring barriers and identifying themes, researchers within these utilized qualitative or mixed-methods designs. Convenience sampling using inclusion criteria was chosen to ensure the HCPs included were specific caregivers to subgroup populations of interest. This type of sampling was used in other studies included in the literature review. For example, a wide group of HCPs was included to ensure sampling of all HCP disciplines that were involved in the care of patients with blunt-chest trauma within one facility (Curtis et al., 2018). Jannson et al. (2018) and Jannson, Ala-Kokko et al. (2013) used convenience sampling specific to critical care nurses to understand adherence unique to this specialty nursing discipline.

Qualitative and mixed-method studies intend to better understand the experience within the shared environment, such as one hospital unit, or within a shared discipline. Generalization to a larger population is not the goal; thus, convenience sampling is appropriate for these methods (Polit & Beck, 2004). Convenience sampling has disadvantages including the potential for selection bias. However, this type of sampling is common and acceptable for these qualitative or mixed-methods designs due to the intent (Creswell, 2011).

Methods can be applied to strengthen convenience sampling and to reduce selection bias within the group. For example, sampling of varied subgroups, such as varied experience levels (Jannson, Ala-Kokko et al., 2013), times/days worked (Guthrie et al., 2018), or cultural backgrounds (Nyeo et al., 2018), may reduce confounding variables within the participants (Caruana et al., 2015). Triangulation, using multiple data sources to corroborate the same

information, can also be used (Creswell, 2011). Sample size is critical to methodology. A large sample size diversifies the responses, but researchers must consider resource feasibility when considering sampling size (Creswell, 2011).

Like the quantitative studies, the population sampling of the qualitative and mixed-method studies was largely dependent on the accessible environment or participants of interest. This largely limits geographical or cultural diversity among the participants in many cases except in those studies that sampled HCPs based on shared discipline or interest independent of a shared physical environment (Goddard et al., 2018). Again, the emphasis of these study types is to deeply understand a shared experience rather than generalizable results (Creswell, 2011). Thus, a limited population sampling is more appropriate for these studies compared to the quantitative studies previously discussed. Within the studies, some researchers categorized responses based on participant subgroups, including experience (Jannson, Ala-Kokko et al., 2013) or position type such as nurse manager versus bedside nurse (Shuman et al., 2019). Though it is appropriate to categorize results in detail concerning data analysis, it is important to note that the researchers' population sampling included this type of variation to allow for this distinction later in the study methodology.

Summary and support of population and sampling in respect to literature review. In all, the case study setting will occur in a critical care unit, appropriate for the MV/T HCP population. A convenience sampling recruited 14 participants among the varied shifts. The pre-screening process confirmed regular interaction with MV/T patients, as described previously. Word of mouth communication from the nurse manager and charge nurse concealed principle researcher information to reduce selection bias as discussed.

The research outlined in the literature review in Chapter 2 supports the selected population and sampling methodology described for this study. Creswell (2011) reviews convenience sampling as an appropriate method for a case study to facilitate adequate sample size based on the availability of people. The inclusion and exclusion criteria ensures the appropriate inclusion of participants with the shared, targeted experience of the study. Beyond the conceptual discussion of Creswell (2011), qualitative and mixed-method studies within the literature also utilized convenience sampling of targeted HCPs. Based on the purpose of the study, the identified literature review, and aligned with case study methodology, the population and sampling was appropriate to answer the three RQs.

Instrumentation

Rationale for instrumentation methods. The design of this study intended to facilitate the exploration of three primary MV/T HCPs groups as it relates to TDF social factors influencing EBP adherence. This objective was achieved by addressing the three identified RQs:

- RQ1a: What EBP actions overlap between primary MV/T HCPs?

- RQ1b: What EBP expectations overlap between primary MV/T HCPs?

- RQ2: How do the HCPs perceive overlap of actions and expectations between primary MV/T HCPs impacts EBP adherence?

- RQ3: How can the TDF social domains inform the findings from primary MV/T HCPs regarding overlapping EBP actions and expectations to contribute to the growing body of knowledge to support HCP transformational change?

To achieve rich, validated data, instrumentation methods must be planned to include holistic and varied data sources (Baxter & Jack, 2008). A review of each instrumentation methods is discussed individually.

Interview tool for HCPs. The primary source of data was the participant semistructured interviews. Each item on the interview tool was directly related to one or more of the RQs. RQ3 was not directly addressed using this tool. The data received from this tool was analyzed using the TDF to organize responses, thus draw conclusions to this question. Appendix A includes the sample tool and correlation between item and related research questions.

The interview instrument was created for the purposes of this study. Hence, the tool has not been utilized in previous studies limiting the availability of tool validation. The tool was pretested before implemented to address the lack of tool validation (Hurst et al., 2015). Three individuals, one from each primary discipline of interest, was selected for pretesting. Each item of the tool was asked of the mock participant to identify item clarity. Based on the responses of the mock interviews, the principle researcher slightly modified the wording of the tool; however, no major content changes occurred.

Interview tool for manager. The researcher also conducted a semistructured interview with the nurse manager of the critical care unit using an abbreviated semistructured interview instrument. This tool was meant to compare the expectations and perceptions of the manager with the expectations and perceptions of the task-performing staff (see Appendix B). Differences in the responses provided an understanding of differences in manager expectations and staff actions. Adding this additional data set facilitated triangulation, thus data validity of the HCP responses (Creswell, 2011).

Facility policies as a data source. To further enrich the data sources, facility policies were collected specific to the care of MV/T patients (see Appendix C). The researcher placed this request for copies of the policies and procedures with the critical care manager. Two policies

were obtained included mechanical ventilation, standard protocols, and expectations of diagnostic criteria and ventilator settings.

Existing internal data on specific patient outcomes or adherence related to MV/T.
Based on the prevalence and significance of VAP, routine facility surveillance is common among acute care facilities (Klompas et al., 2013). This researcher identified and collected images of a unit tracker, a board communicating the number of days since the last VAP diagnosis (see Appendix D). This demonstrated surveillance of VAP, an indicator of health for MV/T patients, to obtain any previously collected data on outcomes and/or adherence. The intention was to understand the current or past state of EBP patient-related outcomes and current policies regarding the delineation of MV/T tasks and expectations, and/or other activities that may socially influence the adherence of MV/T EBP.

Review of literature instrumentation methods. Six studies in the literature review utilized either qualitative (Craig et al., 2018; Goddard et al., 2018) or mixed-method designs (Curtis et al., 2018; Jansson, Ala-Kokko et al., 2013; Jansson et al., 2018; Wolfensberger et al., 2018). Of the two qualitative studies, only one was a case study (Craig et al., 2018). The purpose of Craig et al. (2018) was to explain the process of developing an interventional strategy for stroke patients specific to one Australian hospital system's emergency departments. The case study strategy conducted semistructured interviews of a purposeful sample of ED caregivers within the system to identify barriers unique to the system within the case study (Craig et al., 2018). Using the purpose of the study to identify and build strategic interventions, the instruments developed for the structured interviews and analysis of data was based on a theory previous identified by the researchers. A TDF instrument was utilized to map the data for analysis and discussion after data collection.

Like Craig et al. (2018), the case study utilized semistructured interviews to obtain data specific to the research questions. The instrumentation included additional sources of data to provide a more holistic and rich approach (Baxter & Jack, 2008; Creswell, 2011). Further, an abbreviated instrument specific to the manager added data to understand differing perspectives based on positional hierarchy. This triangulation of data through varied instrumentation further supported the case study's intention to deeply explore the phenomenon from multiple perspectives (Baxter & Jack, 2008).

Data Collection

Data collection of the study largely included data from the interviewing process. Once the participants were selected based on inclusion criteria described in Research Population and Sampling, the interviews commenced. Interviews with participants were recorded with permission. Code names were used during data collection, such as "RN1" to encourage disclosure through confidentiality. The interview guide was used as described in the Instrumentation section of this chapter. This semistructured style facilitated conversational responses guided by the participant. The principle researcher transcribed interviews for further data analysis.

The inclusion criteria form asked participants if he/she would be available for follow up questions. Follow up included confirmation of data understanding. Acceptance of follow up availability was not an inclusion criterion but facilitated credibility when implemented (Suter, 2012). Follow up contact was made by telephone only and was limited to one contact post initial data collection. Information from these follow up contacts was captured using note taking. This member-checking allowed the participants to review the data collected by the researcher to

evaluate the researcher's understanding and capturing of the data. This will be discussed further in the Data Analysis Procedure and Validation sections of this chapter.

Case studies deepen understanding by adding additional data sources (Baxter & Jack, 2008). Policies related to the MV/T EBP care were requested and reviewed. This data source allowed the researcher another perspective on the expectation of leadership regarding the MV/T EBP. Again, the comparison of this data against the interview data assisted in a richer understanding of alignment or gaps among the shared experience.

Unfortunately, due to patient confidentiality concerns within the acute care facility, direct observation of the HCPs on the unit was not feasible. However, VAP surveillance was collected via the VAP tracker. Though direct observation was not available, trends from patient outcome data provided further insight into of adherence practices.

Identification of Attributes

Semistructured interview tools were used to collect the primary data sets to address the RQs. Appendix A details how each item on the instrument related to RQ1 and RQ2. RQ3 was addressed during analysis as described previously. Because of the qualitative nature of the study, and in alignment with the objective of the study, the purpose of the interview tools is to facilitate participants' sharing of perspectives and experiences (Baxter & Jackson, 2008). This qualitative data was reviewed and categorized into more general themes. The RQs provided a framework for the general components that will be collected.

- RQ1a: What EBP actions overlap between primary MV/T HCPs?
- RQ1b: What EBP expectations overlap between primary MV/T HCPs?
- RQ2: How do the HCPs perceive overlap of actions and expectations between primary MV/T HCPs impacts EBP adherence?

111

- RQ3: How can the TDF social domains inform the findings from primary MV/T HCPs regarding overlapping EBP actions and expectations to contribute to the growing body of knowledge to support HCP transformational change?

RQ1a: What EBP actions overlap between primary MV/T HCPs? The instrument tool identifies six commonly performed EBP tasks that can overlap HCP disciplines based on the scopes of practice (Klompas et al., 2014; McConnell et al., 2016). These data points are listed attributes (Polit & Beck, 2004), meaning, the participants listed EBP tasks he/she felt were shared among the HCP groups. This RQ and related tool facilitated a quantitative analysis of shared EBP tasks based on frequency of task reporting. Chapter 4 details the results.

RQ1b: What EBP expectations overlap between primary MV/T HCPs? This research question was posed to understand shared expectations between HCP disciplines. *Expectations* are nominal attributes without order or numerical value (Polit & Beck, 2004). *Expectations* will include what MV/T EBP tasks the participant feels others (i.e., leadership/managers, colleagues, professional discipline) expects or assumes the participant to perform based on his or her HCP discipline. Three other items ask participants' knowledge of MV/T EBP related policies, reporting practices, and motivators/rewards for awareness and perception of shared motivators. Data were categorized to understand what themes among the expectations.

RQ2: How do the HCPs perceive overlap of actions and expectations between primary MV/T HCPs impacts EBP adherence? This RQ explored the perception of the EBP overlap on adherence and the overall impact of adherence. The principle researcher measured *overlap* through nominal responses (Polit & Beck, 2006). RQ2 responses cascaded from RQ1 items, asking if and how the overlap may impact adherence. As similarly explained, the data were categorized during data analysis to identify themes (Baxter & Jackson, 2008; Yin, 2014).

RQ3: How can the TDF social domains inform the findings from primary MV/T HCPs regarding overlapping EBP actions and expectations to contribute to the growing body of knowledge to support HCP transformational change? Like other studies utilizing TDF to frame EBP adherence data (Craig et al., 2017; Curtis et al., 2018; Debano et al., 2017; Goddard et al., 2018), RQ3 was be directly addressed through instrumentation. Rather, the data gathered from the instruments was categorized using the TDF domains and definitions (Lipworth et al., 2013). Lipworth et al. (2013) provided guidance using the revised and validated TDF by Cane et al. (2012). Categorical data were matched to TDF domains using this empirical data (Atkins et al., 2017; Lipworth et al., 2013).

Data Analysis Procedures

Data analysis of qualitative research has many analogies to describe the process of assessing, organizing, and interpreting the vast amount of textual data (Suter, 2012). One description of the process likens data analysis with a jigsaw puzzle (Suter). The first pass of data might seem like a superficial grouping of colors or textures, while subsequent passes of the information allow more detailed subgrouping before finally linking small patterns and lines together for a full picture. This discussion describes the methods used to begin data coding in preparation for analysis.

Upon the initial coding of the data, the researcher began by reading each set of interview data multiple times, estimated at least three to five passes to begin the review to identify common phrases or early themes. This process allowed initial coding of "first impressions" (Saldaña, 2015, p. 4). Key phrases or words were assigned to the text passages to describe or categorize the data.

During this review, the researcher kept notes in the margin of transcripts and a running spreadsheet for tracking early ideas or connections (Suter, 2012). Color coding and highlighting was also be utilized to begin the categorization of ideas. Bracketing was also captured during the first readings of the textual data within the margins of the transcripts to capture researcher thoughts, preconceptions, and thoughts during data review (Tufford & Newman, 2010). Tufford and Newman (2010) report bracketing has been described differently throughout the years; therefore, there is no specific method. Bracketing during coding and analysis can be used to assist the researcher in "uncovering awareness of preconceptions and biases" (Tufford & Newman, 2010, p. 7) based on the researcher's knowledge and experience with the topic to acknowledge potential bias during the analytical process (Saldaña, 2015). For this study, bracketing was chosen as an important method in data analysis due to the shared profession of nursing between the researcher and the RN participants.

Member-checking was also employed. Consenting participants were contacted via telephone to review the collected data and researcher coding for validation (Saldaña, 2015). Minor edits were made for clarification. However, no major adjustments were suggested by the participants.

After these initial activities, a computer-assisted program, NVivo, was used. This secondary review served as a technical method of identifying repeating words and/or phrases while validating the manual work previously performed (Yin, 2014). Analysis was not achieved using this computerized method. However, this reliable method assisted in further validation to ensure frequent words or phrases had been identified.

Saldaña (2015) differentiates between coding and analysis by citing Bernard's 2006 work, "analysis is the search for patterns in data and for ideas that help explain why those

patterns are there in the first place" (p. 8). The initial coding was organized into small phrases, then larger related categories. For example, participants may express a lack of staffing, lack of equipment, and the expectation of others as barriers to adherence. All these codes, then, were grouped into subthemes and themes. Table 3 demonstrates an example of the method. This table is only an example and does not represent collected data. Chapter 4 details findings and categorization of actual data.

Table 3

Example of How Participants Statements Grouped by Code, Subtheme, and Theme

Participant Statement	Individual Coding	Subtheme	Theme
"I am too busy to deal with the patient if he extubates himself if I minimize sedation, plus, some of the other nurses say the doctors are getting the big bucks for that. And honestly, I worry that reducing the medication might put the patient in pain."	Resources	External Influence	Barriers to EBP tasks
	Professional Culture		
	Individual Beliefs	Internal Influence	

The *theoretical proposition strategy* was used to analyze the data (Yin, 2014). Using the literature, personal experience, and theory, the principle researcher developed a conceptual framework in which the data analysis was performed. During final analysis, all data were grouped by RQ, and then finally by the TDF domains, to answer all posed RQs.

The data analysis phase of the study included four phases significant. First reviews facilitated basic coding and categorization (Saldaña, 2015; Suter, 2012). Bracketing captured researcher preconceptions (Hurst et al., 2015). A computerized software tool validated the data for repeating words and phrases (Yin, 2014). Next, working and re-working, using notes and concept charts (Saldaña, 2015), the principle researcher identified patterned statements, subthemes and themes (Suter, 2012). The application of the TDF framed findings and analysis to lead to a concluding theory (Yin). Remaining chapters present findings and conclusions.

Limitations of Research Design

Though the qualitative case study and methods achieved in addressing the RQs, limitations remain (Creswell, 2011). Limitations are methodological and/or researcher induced (Creswell, 2011; Suter, 2012; Yin, 2014). The following sections discuss in detail.

Methodological limitations. Thorough and accurate representation of the case study design and participants requires researcher dedication. This commitment to the study can be resource intensive to provide attention to detail required in all steps from the participant interviews, coding, and the analysis (Creswell, 2011). Though this detailed approach is an advantage of the study, the intensity of the project and the small sample size can also be a potential limitation. This limitation has been taken into careful consideration during the sampling selection. Using carefully diverse sampling as described in *Research Population and Sampling Method*, the principle researcher remains confident the sample provided adequate data, allowing saturation, while being realistic regarding time for data collection and analysis. Again, the study included a smaller sample size; however, included 14 of 16 available staff (88%). The goal to balance the need for enough data for saturation validation and realistic methods for an individual researcher was achieved (Cutliffe & McKenna, 1999).

Methodological limitations of case studies are well-described in the literature. These limitations include a lack of objective data compared to quantitative studies. Though the case study design does not lend itself to a cause and effect relationship between variables, it allowed the exploration of the phenomenon described within the research questions (Yin, 2014). This study aimed to explore how TDF social factors might influence MV/T EBP adherence by addressing the overlap between primary MV/T clinicians. The case study method facilitated participants sharing key information that provided insight into one facility's critical care unit. The in-depth sharing of information from the participants would not be feasible using a quantitative design, nor would the discovery of a cause–effect relationship address the specific research questions posed for this study.

Researcher limitations. Though appropriate for the RQs, a case study design can pose challenges to objectivity in ways that quantitative methods may more transparently address (Creswell, 2011). Data coding, grouping, categorization, pattern recognition, and overall analysis requires interpretation from the researcher (Hurst, 2015; Suter, 2012). In addition to human error, potential researcher bias and preconceptions may influence the interpretation of these processes.

 Data collection, coding, and analysis processes was employed to minimize limitations. The researcher recorded interviews, while multiple reviews of the data using both human and software operations (Yin, 2014) were used, as discussed in the Data Analysis section. Human error was addressed through careful planning and time budgeting to allow for adequate attention over four months (Creswell, 2011). Journaling was also employed to allow traceability into the researcher's thoughts and, finally, conclusions. If needed, this would facilitate the researcher's defense of the analysis by exhibiting how conclusions were drawn (Suter, 2012).

Methods such as bracketing were applied to bring forth researcher bias based on previous professional experience as a nurse and former colleague of some potential participants. Member-checking was also performed to allow an external review of the researcher's understanding and categorization of the data (Saldaña, 2015). Sampling procedures also have attempted to minimize participants previously familiar with the researcher to limit bias further, as discussed in the Research Population and Sampling section. The following Validation section describes specific methods aimed to address validity.

Validation

The validation of qualitative research has undergone a thorough examination with many research experts attempting to define and describe the term (Creswell, 2013). Though some differences exist between sources, the term *validation* generally represents the trustworthiness of

the study from raw data to the conclusion (Creswell, 2013; Suter, 2012). The following discussion of validation will be organized based on credibility and dependability. Validity methods related to these topics are discussed for this study.

Credibility. Credibility has been described as the "believability of findings" (Suter, 2012, p. 363). Though qualitative studies have earned more respect as an important research method, particularly in social sciences, there remains debate on how to demonstrate credibility in these types of studies (Cutliffe & McKenna, 1999). Some methods are similar to the quantitative methodologies such as diversification of the sample population, while others like member-checking are unique to qualitative studies.

Controlling confounding influences are important to ensure validity and credibility (Suter, 2012). The researcher will attempt diversification of the participants. As discussed in detail earlier in this chapter, the participant population included convenience sampling. The population included three discipline groups (RN, MD, and RT). The RN group will then be subdivided between professional nurses and unlicensed assistive personnel (UAP). This diversity was essential to gain an overlapping perspective to address the research questions but does not necessarily control confounding influences. Care was taken to include both a.m. and p.m. shifts to achieve a diversified participant grouping to decrease any bias or differences stemming from the varied shift experiences or culture. Furthermore, the inclusion criteria for participants included requirements that the caregiver must care for at least one MV/T patient per month. This attempted to reduce varied confounders of a lack of experience with MV/T patients.

As described in Data Collection and Instrumentation sections, the researcher gathered multiple sources of data. These varied sources allowed triangulation of data to demonstrate credibility by providing evidence of repeated, similar data (Cutliffe & McKenna, 1999; Suter,

2012). Primary data collection was gathered from the four subgroup disciplines using the same questionnaire and interviewing method. Multiple sources of data provided a varied perspective of the same item topics, including multiple methods of input to evaluate similarities within and subgroups. Furthermore, an interview with the unit manager also elicited a similar strategy to evaluate parallels in the data. Finally, existing policies and MV/T patient outcomes were reviewed. Again, the purpose was to compare data for similarities and differences. The intention to triangulate from multiple sources and provide saturation of data was performed to achieve credible, repeated themes and patterns, demonstrating reliable results (Cutliffe & McKenna, 1999).

Following data collection, data were reviewed multiple times, as described in the Data Analysis section of this chapter. This process, or data reduction, was performed both manually and by using NVivo software to help identify repeated words and phrases for the intended purpose of identifying patterns and themes (Suter, 2012). This repeated method of reducing the data assisted in the confirmation of patterns and reduce the potential of missing key information that may be pertinent to the study conclusion.

Confirmation of the data collection, or member-checking, was completed. As described earlier in the Research Population and Sampling Method and the Data Collection sections of this chapter, the researcher sought follow up permission; however, it was not required for inclusion. The objective of this follow up was to confirm the credibility of the evidence (Suter, 2012). Participants who consented to follow up calls were contacted over the telephone to review the coding and categorization of meaning with each participant's intended meaning of the statement. Chapter 4 details the rate of participants who volunteered for member-checking. No major changes resulting in recoding were required based on member-checking.

Dependability. Dependability is another important step to ensuring the validity of a qualitative study. Like reliability, dependability describes the ability to repeat the study by getting similar results (Suter, 2012). Also contributing to the overall trustworthiness of the study, some dependability methods overlap with credibility. New methods are described in detail while overlapping methods will be summarized.

Rich documentation and audit trails are all methods used to demonstrate dependability (Saldaña, 2015; Suter, 2012), allowing others to review the primary researcher's notes to draw independent conclusions (Suter, 2012). As described in the Data Collection and Data Analysis sections, the journaling in the margins occurred during transcription of the data. This journaling captured researcher thoughts, ideas, and notes during coding.

Expected Findings

The supporting literature of this study supported the expectation that TDF social domains influence MV/T EBP, particularly in conjunction with overlapped tasks and expectations. The principle researcher, based on personal experience and supporting evidence detailed in Chapter 2, expected to confirm HCP overlap regarding tasks and expectations. Each RQ expected findings are summarized in Table 4 and detailed in the following discussion.

Table 4

Crosswalk of RQ, Expected Findings, Method, and Rationale

Research Questions	Expected Findings	Method	Cited Resources for Rationale
RQ1a/b: What EBP actions and expectations overlap between primary MV/T HCPs?	Participants will identify specific EBP tasks and expectations that overlap.	• Interview tools • Existing policies	Abode et al., 2016; Guthrie et al., 2018; Klompas et al., 2013; McConnell et al., 2018; Southcott et al., 2019; Welton et al., 2016
RQ2: How do the HCPs perceive overlap of actions and expectations between primary MV/T HCPs impacts EBP adherence?	Participants will share perceptions of the impact of overlapping tasks and expectations decrease EBP adherence.	• Interview tools • Existing data on MV/T outcomes	Guthrie et al., 2018; McConnell et al., 2016; Wolfensberger et al., 2018;
RQ3: How can the TDF social domains inform the findings from primary MV/T HCPs regarding overlapping EBP actions and expectations to contribute to the growing body of knowledge to support HCP transformational change?	Participants' responses will align with TDF social domains, confirming social domains should be emphasized considering behavioral strategies for supporting transformational change	• Collected data • TDF social domain definitions during categorization of data coding and analysis	Curtis et al., 2018; Debano et al., 2017; Goddard et al., 2018

RQ1 rationale support for expected findings. The detailed literature review in Chapter 2 examined current studies involving EBP MV/T care. These studies demonstrate the importance of multidisciplinary MV/T care on patient outcomes to address the holistic needs of the patient. As a result of the cross-disciplinary care required, overlap exists in both tasks and expectations. Abode et al. (2016), Guthrie et al. (2018), Klompas et al. (2013). McConnell et al. (2016), Southcott et al. (2019), Welton et al. (2016) identified potential or actual gaps in care based on such overlap and/or HCP role ambiguity. The patient population and HCPs included in these

studies closely resemble the patient population and primary HCP disciplines for this study. Further, the researcher proposing this study is also an RN who has expertise in the MV/T care specialty. From personal experience working on MV/T multidisciplinary teams, such overlap among the primary HCPs is standard practice.

The studies supporting RQ1 were quantitative, including quasi- and preexperimental. Studies included a range of sample sizes from 44 in Canada (Welton et al., 2016) and 65 in Australia (Southcott et al., 2019) to 1,273 in the U.S. (Abode et al., 2016). The quantitative methodology and larger sample sizes facilitate generalizability (Creswell, 2011) further supported by the varied location yet similar results. The researcher's experience working within the population is also varied and extensive. Fifteen years of nursing experience over five varied regions of the U.S. has allowed in-depth experience in multiple types of healthcare settings and systems, all with similar overlapping care within the MV/T patient population. In all, the principle researcher expected the RQ1 data would demonstrate similar results of overlap, as discussed.

RQ2 rationale support for expected findings. Guthrie et al. (2018), McConnell et al. (2016), and Wolfensberger et al. (2018) conducted studies to understand factors impacting HCP adherence. Using preexperimental studies, Guthrie et al. and McConnell et al. demonstrated that the overlap of tasks among varied staff members contributed to a gap in care altogether. While Wolfensberger et al. utilized a mixed-methods study to identify professional expectations of overlapping tasks also impacted adherence, noting participants expressing a hesitancy to complete tasks based on what he/she perceives his/her role in patient care (Wolfensberger et al., 2018). Found in literature, and also noted in the personal experience of this author, the principle

123

researcher expected to identify a variety of responses regarding the impact of overlap of tasks and expectations of the MV/T HCPs.

RQ3 rationale support for expected findings. Based on the findings of previous studies (Curtis et al., 2018; Debano et al., 2017; Goddard et al., 2018), findings of this study were expected to align with the social domains of the TDF. These studies investigated adherence using the TDF to frame the studies and results, particularly identifying the importance of the social domains. Upon review of the MV/T literature detailed in Chapter 2, many studies identified factors impacting HCP adherence that may have been included in the social domains if the TDF had been utilized (Abode et al., 2016; Fisher & Butler, 2017; Guthrie et al., 2018; Khan et al., 2019; Klompas et al., 2013; Mah et al., 2017; McConnell et al., 2016; McGrath et al., 2017; Southcott et al., 2019; Welton et al., 2016; Wolfensberger et al., 2018).

Ethical Issues

Ethical considerations must be adhered to in research studies to include both participant protection and limiting researcher bias. In all research, researchers must protect participants from potential harm (Breault, 2006; Yin, 2014). The importance of research approval from the IRB is critical to ensure participants are protected through researcher action. The following described actions will promote such protection in the study.

As discussed in the Research Population and Sampling Methods section of this chapter, participants were asked to sign an informed consent document (Yin, 2014). This document detailed the participants' right to confidentiality and protection from harm related to the study. The participants were assigned a code number to avoid the need for recording participant names. Participants were informed during the data collection that any quoting or referencing used from specific interviews will be referred to as "RN1," for example. Data associated with the

participants' information and data collected from the study is and will continue to be kept in a locked safe in the principle researcher's office. Data stored on a computer is encrypted using an encrypted capable USB drive. All stored data will be destroyed 3 years after this study's publication. The consent described the study's participation as voluntary and without harm or recourse due to lack of participation. This same chapter section details the method of selection to promote an equitable selection of participants. Because all participants of this study will be employed HCPs, no vulnerable populations were enrolled.

Conflict of interest assessment. Researchers can introduce bias, either consciously or unconsciously (Yin, 2014). Unconscious bias that may skew results was addressed using the researcher position in the following section. Conflicts of interest are factoring influencing the study that benefit the researcher in some way (Romaine, 2015). These can include financial or advancement benefits. Deep experience or prior connections with the organization or people being studied can result in conflict of interests; however, these connections do not always lead to bias (Romaine, 2015). Researchers must disclose potential conflicts and minimize conflicts. An objective assessment of feasibility without conflict should be conducted.

Section Research Population and Sampling Methods discloses this researcher's previous affiliation with the site and potential participants. The researcher was previously in the position of a nursing educator with academic authority over then-students. It is foreseeable that former students are now practicing nurses at the selected hospital site. This past relationship with the facility and the participants could create a bias and conflict of interest. To decrease this risk, the researcher has outlined methods in Research Population and Sampling Methods how researcher information was concealed from the participants until selection has been completed. Finally, any

other biases or held researcher positions resulting from previous relationships with the facility or participants are addressed below.

Researcher's position. In recent years, the researcher's position has gained more attention (Berger, 2015). *Reflexivity* has been termed to capture the act of researchers acknowledging potential personal biases and positions and their ability to accommodate to ensure fair representation (Berger). Impacting characteristics can include but not limited to gender, age, race, experiences, or preferences. Positioning can impact not just the researcher's perception and evaluation of the data, but it can also impact the way the participants interact with the researcher. The application of researcher positioning and methods to control are discussed.

To increase reflexivity in this study, the research acknowledges positions potentially creating bias (Berger, 2015). The principle researcher is a woman and a nurse. Potential biases included a different relationship, and thus responses from the male participants compared to the female participants. More so, gender differences are prominent among the varied disciplines within the study with more females in nursing and more males in respiratory therapy and medicine. It may have been more comfortable for the female participants to share uncandidly compared to the other male participants. Furthermore, the researcher's nursing experience may have further created bias. Finally, the researcher had previously worked within the facility where the study takes place, potentially pre-shaping beliefs of practices within the hospital.

Prescreening the interview questions with sample participants allowed the researcher to practice self-supervision. During this time, the researcher noted the delivery of questions and attempted to interact in similar ways with all sample participants regardless of gender or discipline. Before the data collection and interviewing of participants, the principle researcher read an introduction statement to all participants. This statement included an explanation of how

participant security and confidentiality was protected while giving a review of participant expectations and the overall purpose of the study. Bracketing during the study interviews allowed the researcher to capture inner thoughts occurring during the interview (Tufford & Newman, 2010). This action demands the researcher positioning acknowledge the thoughts to facilitate objectivity during a later review.

During data collection, triangulation provided a method to improve validity and reduce researcher positioning (Berger, 2015; Creswell, 2011). The verification of patterned information from the varied sources further improved the trustworthiness of the data to ensure objectivity. After the data collection, the researcher performed member-checking to ensure their responses were captured objectively and truly reflect what he or she meant during the interview (Berger, 2015; Birt, Scott, Cavers, Campbell, & Walter 2016). Journaling in the margins of the data during the coding and analysis allowed the same recognition of researcher bias as does bracketing during the interviews (Berger, 2015; Tufford & Newman, 2010).

Chapter 3 Summary

The summarized literature in this chapter noted the impact and significance of HCPs' lack of adherence to MV/T EBP. This same literature has identified the common theme of TDF social domains impacting adherence, possibly emerging due to the overlapping of roles and expectations (Abode et al., 2016; McConnell et al., 2016; Southcott et al., 2019). Thus, this supports a study addressing the RQs:

- RQ1a: What EBP actions overlap between primary MV/T HCPs?
- RQ1b: What EBP expectations overlap between primary MV/T HCPs?
- RQ2: How do the HCPs perceive overlap of actions and expectations between primary MV/T HCPs impacts EBP adherence?

- RQ3: How can the TDF social domains inform the findings from primary MV/T HCPs regarding overlapping EBP actions and expectations to contribute to the growing body of knowledge to support HCP transformational change?

The researcher conducted a case study to address the RQs using methodology as described above. Using a convenience sampling of the three primary HCPs groups, the researcher collected data during semistructured interviews. Data were recorded and coded using manual and electronic methods. Methods to control for bias and increase validation was used and included: diversification of participant sampling, triangulation, member-checking, bracketing, and journaling (Creswell, 2011; Cutliffe & McKenna, 1999; Saldaña, 2015; Yin, 2014). The plan included the protection of the participants achieved IRB approval with informed consent, confidentiality, and data protection (Yin). Other ethical issues such as previous researcher bias and positioning were addressed using validation methods (Berger, 2015). Thus, in the review of this information in comparison with the this original study's objectives and outlined RQ, this principle researcher declares this methodology is appropriate, logical, and resulted in objective and fair findings.

Chapter 4: Data Analysis and Results

Introduction

To date, 60%−70% of all intubated patients experience a preventable adverse event (Fisher & Oster, 2017; Timsit et al., 2017). The cost burden of such events can range from $40,000-58,000 per incident (Fisher & Oster, 2017; Timsit et al., 2017). With almost one million intubations per year (Cheung & Napolitano, 2014; McConnel et al., 2016), the overall potential cost to human lives and the economy is overwhelming. Fortunately, experts state such events are preventable (Khan et al., 2019; Sousa et al., 2019). Unfortunately, the recommended actions aimed to avert these costly complications are often not upheld (Tucker, 2019).

Evidence-based practice (EBP), a collection of research-based guidance, directs health care providers (HCPs) in providing state-of-the-art care and interventions based on recent, quality research (Jun et al., 2016). This is particularly true in advanced respiratory care, where EBP is critical to promote desired patient outcomes (Klompas et al., 2014; Mitchell et al., 2013). However, changing HCP behaviors to align with new EBP recommendations is complex and multifactorial (Jylha et al., 2017). A wide variety of behavior theories have been used to increase the transformation of HCP behavior to increase EBP adherence, including the Theoretical Domains Framework (TDF), a simplified model for non-behavioralists (Charlesworth et al., 2016; Jun et al., 2016; Morris & Faulk, 2012). To date, a lack of data exists using the TDF in the mechanically ventilated/tracheostomy population (MV/T); thus, this study addresses aims to add knowledge specific to this topic.

The MV/T population requires significant multidisciplinary care from a wide variety of HCPs (Klompas et al., 2014). Three specific primary care providers include nurses, including both registered nurses (RNs) and unlicensed assistive personnel (UAP), respiratory therapists

(RTs), and physicians (MD). Because of their overlying scopes of practice, many EBP MV/T tasks overlap. This overlap is a factor impacting EBP adherence (Abode et al., 2016; Guthrie et al., 2018; Klompas et al., 2013; McConnell et al., 2016; Southcott et al., 2019; Welton et al., 2016). A more in-depth review of this HCP overlap resulted in an emerged theme indicating social factors, such as peer influence or cultural expectations within the disciplines, are a significant contributor to adherence (Abode et al., 2016; Guthrie et al., 2018; Klompas et al., 2013; McConnell et al., 2016; Southcott et al., 2019; Welton et al., 2016). Social factors are well-defined by the Theoretical Domains Framework (TDF) (Atkins et al., 2017), a simplified behavioral model successfully used in many high-risk patient populations requiring adherence (Debano et al., 2013). However, only one study (Goddard et al., 2018) in the MV/T population was identified using the TDF to frame the results. As a result, the principle researcher three research questions (RQs):

- RQ1a: What EBP actions overlap between primary MV/T HCPs?

- RQ1b: What EBP expectations overlap between primary MV/T HCPs?

- RQ2: How do the HCPs perceive overlap of actions and expectations between primary MV/T HCPs impacts EBP adherence?

- RQ3: How can the TDF social domains inform the findings from primary MV/T HCPs regarding overlapping EBP actions and expectations to contribute to the growing body of knowledge to support HCP transformational change?

A case study was utilized to addressed the RQs. This method was supported within the literature review detailed in Chapter 2. The professional experience of the principle researcher is congruent with the MV/T topic as an experienced nurse and subject matter expert in artificial airway and ventilation. As both a practicing HCP and a research medical device research

specialist, this topic remains very important to the principle researcher of this study. Within both these roles and over 15 years' experience, the researcher recognizes the importance of human factors critical to optimizing patient outcomes.

The case study was executed independently by the principle researcher. Using an interview tool developed for this study, interview data was collected via audio recordings and transcribed. Data were coded and analyzed using manual and software methods, then grouped into patterned statements and themes. Potential biases, including backyard research, was mitigated through various validation methods, including blinded participant recruitment, triangulation, bracketing, and member-checking. This chapter details the findings and analysis from the execution of the study.

Description of the Sample

Convenience sampling was utilized in this case study. This discussion details the setting of the study, the population, and participation rates in comparison with available staff to answer the RQs. The described population includes demographic data collected. The presentation of this data is limited to protect the identities of the participants.

Setting and sampling methodology description. The study setting was a 200-bed hospital serving a large geographic in the southeastern U.S. The facility operates a variety of units, including general acute care, emergency center, operating suites, a critical care unit (ICU), and an intermediate step-down care unit. Only the ICU was selected based on the limited RN and RT care the patient receives in other areas during intubation. Though the critical care unit has a 20-bed capacity, only 14 beds were considered "open" for admission due to staffing and hospital need. During the study, the total patient census was nine.

In alignment with the planned methodology, the convenience sampling included RN, UAPs, RTs, and MDs. Initially, the goal was to include a total of four participants from each shift, split equally between the day (a.m.) and evening (p.m.) shifts, totaling 16 participants. The intent was to ensure a varied representation of the disciplines over the a.m. and p.m. personnel. Th sample was limited to personnel available during the time of research which included two consecutive a.m. and p.m. Inclusion criteria included *regular* care of an MV/T patient, defined as at least one intubated patient per month.

Communication of the study was given to the staff verbally from the charge nurse on duty. The staff received information regarding the research topic, estimated time of the interview, and the incentive $5 coffee gift card after voluntary completion. Interested potential participants were referred to the primary researcher, located in a small, private, conference room near the break room for more information. Introductions, details of the study, and a review fo the consent form followed. Individuals willing to participate were screened for inclusion per the discussed criteria and asked to sign the consent.

Response rate of total available staff. A total of 16 staff members were present on the calendar day over two shifts. The total number of participants included 14 staff members for an inclusion rate of 88% (see Table 5). The day shift included five RNs, one UAP, one RT, one MD, and the RN manager. All staff excluding one RN participated (8 of 9). Similarly, on the PM shift, five RNs, one RT, and one MD were included. One RN did not participate (6 of 7). The total participation rate for all possible staff members over both shifts was 88%, including 14 of 16 potential staff members.

Table 5

Response Rate, Total Number of Staff Available by Shift, by Discipline

	RN	UAP	RT	MD	Nurse Manager	Total	Response Rate
AM Staffed	5	1	1	1	1	9	
AM Included Participants	4	1	1	1	1	8	89%
PM Staffed	5	0	1	1	0	7	
PM Included Participants	4	0	1	1	0	6	86%
Total Staffed	10	1	2	2	1	16	
Total Included Participants	8	1	2	2	1	14	88%

The primary researcher originally planned to include two staff members per discipline, per shift for a total of 16. However, the low patient census in comparison to capacity decreased the number of available staff on both shifts. Furthermore, the staffing matrix of the unit included primarily RNs with only one RT, UAP, and MD discipline per shift, decreasing the number of participants available from these groups. Despite the patient census and staffing, the overall participant response rate of 88% (14 of 16) was close to the planned target of 16 participants. While fewer RT, UAP, and MDs were included based on staffing, an unexpected increase in RNs resulted. Rather than an equal amount of all disciplines, the included participants more closely represented the daily staffing matrix with RNs to UAP/MD/RT by 5:1. Thus, the impact of this change based on planned methodology did not appear to impact the results negatively, and in fact, may more closely represent the unit's staffing population.

Sample description. The total sample included 14 staff members of varying disciplines and experiences. The discipline breakdown included eight RNs, two RTs, two MDs, one UAP, and one nurse manager. The RNs (4), RTs (1), and MDs (1) equally represented both a.m. and p.m. shifts, with the UAP and nurse manager working representing the a.m. shift only. Based on the low patient census, a UAP was not available for the p.m. shift. The nurse manager role is administrative and only scheduled for the a.m. shift. Table 6 details the number of participants by discipline and shift.

Table 6

Number of Included Participants by Discipline

	RN	UAP	RT	MD	Nurse Manager	Total
# AM Participants	4	1	1	1	1	8
# PM Participants	4	0	1	1	NA	6
Total	8	1	2	2	1	14

A wide variety of experience levels existed in the sample. The largest discipline group (RN) consisted of eight participants with a range of nursing experience from 0.6 years to 13 years ($M = 5.6$, $SD = 5.5$). The a.m. shift of RNs was slightly less experienced ($M = 5$, $SD = 3.6$) compared to the p.m. RN shift ($M = 6.1$, $SD = 5.5$). Similarly, the p.m. RT was more experienced than the a.m. RT at 11 and 13 years ($M = 25$, SD, 2.1). The MDs were much closer in experience at 35 and 33 years between a.m. and p.m. ($M = 24$, $SD = 1.4$). Only one UAP and the nurse manager were included in the sample. The UAP had 35 years in the role while the nurse manager had held the administrative role for two years. The overall range in experience in the sample ranged from six months to 39 years. Table 7 details the mean experience of each discipline by shift and the overall experience by discipline.

Table 7

Experience of Participants by Discipline, Total, and by Shift

	RN	UAP	RT	MD	Nurse Manager
Mean Experience (years) by Discipline / AM	5 (2–10, *SD* = 3.6)	35	11	35	2
Mean Experience (years) by Discipline / PM	6.1 (0.5–13, *SD* = 5.5)	NA	39	34	NA
Mean Experience (years)	5.6 (0.6-13, *SD* = 4.4)	35	25 (11–39, *SD* = 2.1)	34 (33–35, *SD* = 1.4)	2

The principle researcher deemed demographic and ethnicity were not needed to address the RQs, thus, did not collect this data. Live interviews allowed researcher observation of gender. All RNs were female, and the remaining disciplines and nurse manager included three females and three males. The breakdown of gender by HCP group is disclosed based on the low number of participants from each group; thus, the potential to identify the participants with this information is greater. The effort to maintain participant confidentiality supersedes the need to disclose this information as it does not impact the study's objectives.

Mitigating factors. Based on low patient census and staffing ratios, the availability of participants differed from expectations. Extending the data collection days from two shifts would not have increased access to varying staff members. RTs and MDs reported consecutive scheduling of three to seven days, a staffing strategy to maintain patient continuity of care among shifts. Thus, the available staff on the days of data collection were not expected to change within the next three scheduled days.

Convenience sampling was performed on all available, eligible staff, based on the inclusion criteria (see Table 2). Noted in Table 5, eight of nine a.m. staff (89%) and six of seven

(86%) p.m. staff were sampled for a total of 14 of 16 participants. The charge nurse stated the nonparticipating staff cited reasons for being "too busy" and "not interested" in the study.

The shift from equal discipline representation of all disciplines to the convenience sampling of all available and eligible staff resulted in a more proportionate distribution of the standard staffing matrix. The principle researcher accepts the response rate of 88% to be adequate based on the availability of overall staff and the representation of the sample to usual staffing practice. Though the total participant sampling shifted, the matched proportion of participants discipline groups to staffing matrix may have had a positive impact on the study since the sampled population more closely represented the targeted group of the ICU to address the RQs (Yin, 2014).

Description of the sample summary. The participant sampling was adequate to address the RQs of the study. Participants were included from all key disciplines and had a wide variety of experience levels from 6 months to 39 years. On average, the variation of experience between a.m. and p.m. shifts differed slightly (5–6.1 years) among the largest sampled group (RNs) (see Table 7). The sampling methodology changed from purposeful to convenience sampling based on staff availability; however, the sampled population more closely matched the daily staffing matrices and ratios. Based on the case study methodology and the intent to understand one group's experience, this change did not impact the ability to address the RQs as stated in the study.

Research Methodology and Analysis

The research methodology utilized was a qualitative case study. The selection of the methodology and analysis of data were based on qualitative research methodology references and in congruence with EBP reviewed in Chapter 2. The methods and analysis aligned with these

references to address the posed RQs. Key methodology activities are discussed and supported to achieve study objectives and address RQs.

Case study design and accepted methodologies. The goal of this study aimed to add meaningful information to the transformational education and leadership body of knowledge to support the implementation and sustainment of MV/T HCP EBP through the exploration of TDF social factors. The three RQs were designed to identify what actions and expectations overlap, how overlap impacts adherence, and how the TDF social domains may frame these findings to support HCP transformational change needed to adhere to EBP. The qualitative case study design facilitates the exploration of one facility's experience with this phenomenon (Creswell, 2011).

Methodology. The methodology of this study mirrors various qualitative case study references, such as Yin (2014) and Creswell (2011). Research periodicals further provided support for analyzing data (Saldaña, 2015; Suter, 2012). The analysis was executed per the planned methodology, described in detail in Chapter 3, and summarized below.

Data collection from interviews of the participants provided raw textual data. Audio recording was used to capture the data. Data were transcribed later by the principle researcher for analysis. During this transcription, an auto-transcription from the audio recorder was transferred into a Microsoft Word file. The transcript was corrected by the principle researcher by re-listening to the audio.

As planned in Chapter 3 methodology and in alignment with Suter (2012) and Saldaña (2015), the principle researcher noted early patterns of data in the margins by inserting comments, deemed "pattern matching" by Yin (2014, p. 143). The researcher entered bracketing and insights in the margins (Tufford & Newman, 2010). Color coding also assisted in pattern

137

recognition during initial analysis (Yin, 2014). All interview transcripts included this process. Each transcript was saved as individual Microsoft Word documents.

The principle researcher grouped like-meaning coded statements termed *patterned statements*. Pattern statements were then noted in a spreadsheet (with participant code names at the row and various responses in descending columns, creating a matrix of patterns across all participants (see Appendix A; Yin, 2014). An "x" was placed in the corresponding cell to indicate responses, then later changed to "1" in the spreadsheet for formula calculations. This process was repeated up to five times to continue to identify patterned statements (Saldaña, 2015; Suter, 2012). The principle researcher grouped statements into *themes* and *subthemes* that included broader categories of similar pattern statements to identify relevant meaning (Creswell, 2011). Table 8 illustrates a sample of data grouped into patterned statements, subtheme, and theme.

Table 8

Sample of Participant Statement, Pattern Statement, and Theme Identification

	Participant Statement	Pattern Statement	Subthemes	Theme
RN 1	"We have to be motivated to do the right thing. I think it looks really bad on us as a unit if the patient has a bad outcome."	Fear of negative perception from others	Perceived Expectations from Others	Upholding Expectations
RN 4	"It's like you always do better when you know someone is looking."			
RN 5	"Even though RT is doing it, it's my job to make sure everything is in the right place and safe for the patien.t"	Duty to the patient	Self-Expectation	
RT 1	"Everyone is super on top of it for the patients. If something needs to be done, everyone just does it. That's what our job is."			
MD1	"Computer reminders are always sending you flags."	Computer reminders	No subtheme designated	Feedback

Computer software validated patterns and themes from the transcripts by loading

individual files into NVivo software (Creswell, 2011; Yin, 2014). The principle researcher

individually reviewed each transcript using the drag and drop feature for the selection of

"nodes." The master analysis data sheet was updated based on additional pattern statements

identified using this computer process.

Analysis by RQs. The RQs were reviewed with the data analysis, patterns, and themes (Yin, 2014). Direct analysis with the RQs facilitated the interpretation of the data and further framed how the data were represented (Creswell, 2010). RQs were printed and physically overlaid onto the notes and graphics previously sketched out. Data presentation was then analyzed based on the RQs. This discussion addresses each RQ.

RQ1 included two subparts, RQ1a and RQ1b. As stated, RQ1 addresses both *action* and *expectation* overlap. Participants identified five activities, or *actions*, shared among the disciplines. The listed-attribute responses facilitated a quantitative calculation, the rate of shared activity over the total of participants. However, participant responses to share *expectations* were open-ended, qualitative, and more complex, requiring coding analysis. Thus, the differences in data type best suited a split in the original RQ1. RQ2 and RQ3 are not subdivided.

Quantifiable data for overlapped actions (RQ1a) were analyzed. Reported shared tasks by participants were counted and compared. This analysis was listed by the percentage of participants identifying the shared tasks.

Patterned statements addressing RQ1b were categorized by themes and subthemes later honed for data presentation and representation (Creswell, 2011). A total of two themes emerged from the data, facilitating further organization and analysis. *Feedback* and *upholding expectations* were designated as themes. *Upholding expectations* included four subthemes: *self-expectations, perceived expectations from others, expectations of others*, *perceived expectations from leadership*. The principle researcher organized patterned statements into themes and subthemes. Figure 2 shows an example template of theme and subtheme organization.
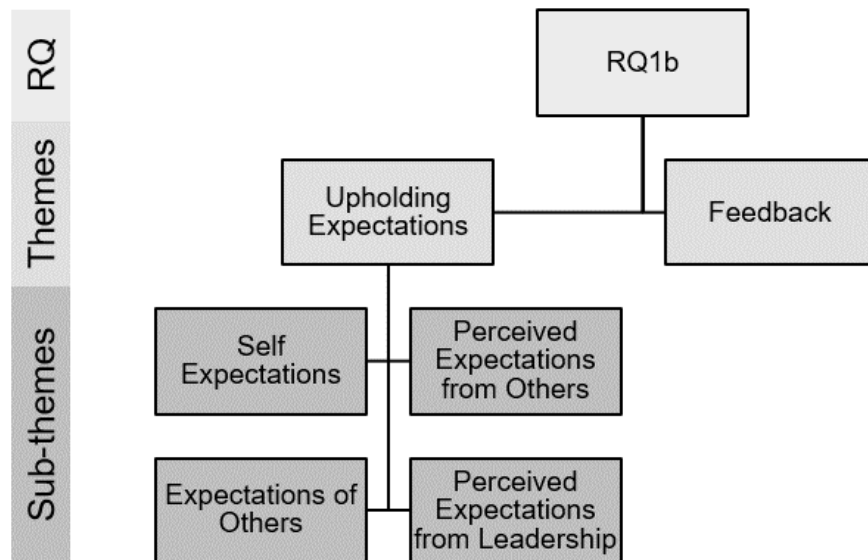
Figure 2. RQ1b organization of themes, subthemes.

RQ2 addresses how the perceived overlap of actions and expectations impacts EBP adherence. Responses to this question were mostly binary, identifying two themes: *Positive* or *negative* impact from overlap. Within these themes, subthemes included impact on either the *patient* or the *HCP*. Figure 3 shows an example template of two themes and four subthemes organization.
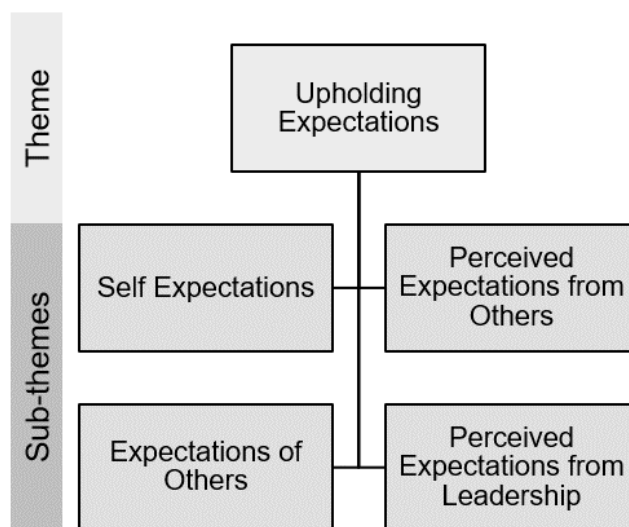

Figure 3. RQ2 organization of theme, subthemes.

RQ3 addresses framing the data by TDF domains. Chapter 2 details the conceptual framework of the study (see Figure 1). In summary, the conceptual framework represents the patient transition from current state of health to patient outcomes. An arrow passing over a three-ringed circle represents the patient transition. The inner circle demonstrates three overlapping circles to signify the primary HCPs caring for the patient. The next ring is EBP care, facilitators, and barriers, necessary to enable positive patient outcomes. The outer circle is the TDF, a simplified social, cognitive, and behavioral framework (Cane et al., 2012). The circle includes 14 domains impacting behavioral change (Atkins et al., 2017), visually framing the EBP adherence. To address RQ3, the data were arranged into an "orderly scheme" (Polit & Beck, 2004, p. 119) by categorizing similarly coded responses, patterned statements, into TDF domains using definitions provided by TDF literature (Lipworth et al., 2013).

A sketched data display organized pattern statements and themes in correlation to the RQs (Yin, 2014). Using note cards, hand-drawn images and graphs, and various computer software programs like Microsoft-Word, Excel, and PowerPoint, the principle researcher manipulated visual forms of data display to understand the themes and meaning from the data. Ultimately, all patterned statements were matched with a TDF domain.

Deviations from planned methodology. Chapter 3 methodology details planned activities for study execution and analysis. Overall, few deviations occurred from the original research design. Deviations and potential impact on the study were evaluated and mitigated as much as possible by the principle researcher.

Participant sampling mitigation. As noted in the previous section, the expected sampled population differed by number and proportions. The planned sampling included a purposeful sample of two participants from each discipline and each shift for a total of 16 participants.

Based on staff availability due to low patient census, the sampling was changed to a convenience sampling of all available staff, resulting in 14 staff members. Though a deviation, the principle researcher feels the included participants better represent the natural population of the critical care unit on any given shift. Based on the intent of the case study to understand the group's culture, this shift may strengthen the study. As planned, the participants included an overall 88% response rate of both a.m. and p.m. shift disciplines.

To strengthen the validity of the study through mitigation of backyard research, the principle researcher planned and maintained confidentiality from the potential participants until he/she had expressed interest in the study. The principle researcher has previous experience at the facility through an academic/faculty role of then-nursing students. Despite 4 years between the faculty role ended and the study implementation, the potential for backyard research bias (Creswell, 2011) existed. Thus, the researcher used confidentiality during recruitment. Communication of the study to the potential participants was spread through word of mouth at shift commencement, allowing confidentiality to be maintained. Principal researcher identity was not revealed until the potential participants entered the designated interview area for more information.

Instrumentation mitigation. An interview tool created for this study was used to interview participants (see Appendix A). Additional data sources made available to the principle researcher were gathered to facilitate triangulation and strengthen validity (Yin, 2014). The nurse manager shared copies of policies or bundles specific to M/VT EBP care. With verbal permission from the charge nurse, the principle researcher took pictures of existing data on the unit that included the VAP tracking poster (see Appendix D). None of the data included patient-specific health information.

Data collection mitigation. Data collection took place on the unit at the research site in either a private conference room or the staff break room during staff downtime when patient care or duties were required. An advantage of this on-unit interview location was that participants were not required to use personal time. One potential disadvantage of the recommendation may have been reduced focus or time spent in the interview. The average interview was 16 minutes, 5 seconds. No participant exhibited rush behaviors like pressured speech, nor did the interviewees stop the interview without addressing all questions. Not all interviews were private as other staff occasionally came in and out of the break room during interviews. If any hesitation was noted during non-private moments, the principle researcher returned to that topic when privacy was reestablished.

To increase validity, participants were asked if they would consent to follow up calls. One RT and three RNs consented. Nonparticipating staff were not asked for formal reasoning for declining the study; however, some participants noted a reluctance to give out his/her telephone number while others stated variable work/sleep hours. All consented follow-ups were contacted, and in-depth notes were taken. Updates were made to the datasheets if necessary. Matched TDF domains and definitions were also shared with participants to gain participant perspective.

Mitigation during analysis. This methodology and analysis align with similar qualitative case studies in Chapter 2 and were congruent with the planned methods in Chapter 3. Previous sections of this chapter detail methodology and analysis methods. No mitigation methods were required for the analysis.

Validity and ethical considerations. No mitigations to ethical or validity considerations were required. All participants signed written consents, and no personal information was

recorded. Further actions to protect patient identity included withholding any reporting of gender information based on profession or shift due to the potential to identify smaller groups of HCPs.

Methodology and analysis summary. Sampling and recruitment changed from purposeful to convenience sampling based on a limited population; however, it resulted in a proportionate distribution of staff that represents the staffing matrix of HCP ratios. Per the recommendation of facility managers, the interviews took place during staff shift, on the unit, which may have increased participation but may have limited the time of the interviews though no participant indicated he/she needed to leave the interview early. Interview data were collected and recorded. Validity activities included bracketing, member-checking, and triangulation.

Summary of the Findings

After the analysis of more than 117 minutes of data from 14 interviews, 115 coded statements and 25 patterned statements were organized by subtheme, theme, and ultimately by RQ. Quantitative data were analyzed to address RQ1a while qualitative data addressed RQ1b, RQ2, and organized by TDF domain to address RQ3. These findings are presented in the order of evolvement during the analysis.

Quantitative data. First, quantifiable data were noted, specifically from interview questionnaire items 3 and 6 (see Appendix A). The respondents collectively listed a total of five shared tasks, *cuff pressure management, tracheal suctioning, sedation vacation, intubation,* and *oral care*. Some participants listed more than one shared task resulting in a total of 17 responses. The most frequently identified shared task was *cuff pressure management* (11 of 17). *Tracheal suctioning* was the second most indicated task (3 of 17). Only one participant listed either *oral care, intubation,* or *sedation vacation* as shared (1 of 17).

Qualitative data. Coded data were initially identified from the transcripts using Microsoft Word comment features. The principle researcher coded data with like meanings then grouped and labeled with patterned statements. Patterned statements were transferred to a Microsoft Excel datasheet. Table 8 shows a sample of how participant statements organized into patterned statements, subthemes, and themes.

Organization of patterned statements into categories of themes and subthemes further systematized data. Initially, these statements were broadly grouped into themes, then into subthemes during coding. In the analysis, RQs framed data organization. In total, three general themes were identified in the qualitative data. Themes included: (a) *impact of overlap,* (b) *feedback,* and (c) *upholding expectations*.

Impact of overlap included two subthemes of positive and negative impact. This theme included any patterned statement referencing the participants' perceptions of the effect of overlapped tasks and expectations. Twenty-seven coded responses comprised six patterned statements categorized as impacting patients or HCPs. Figure 4 illustrates the organization of the *impact of overlap* theme and subthemes.
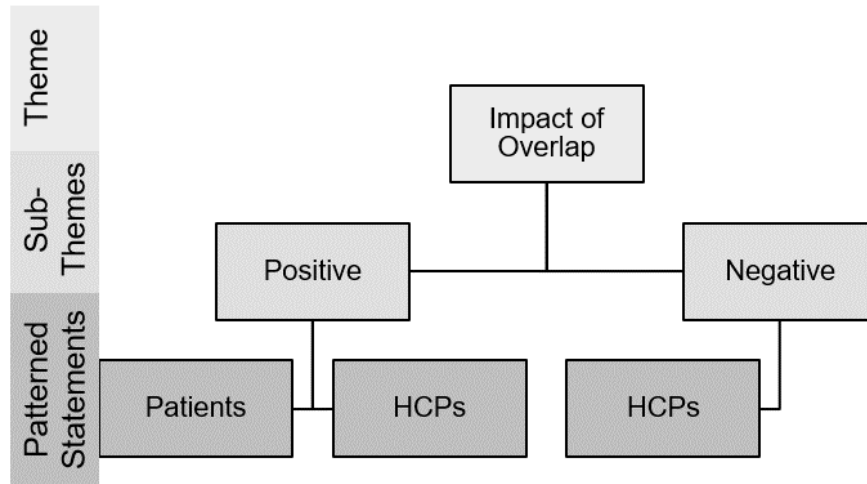
Figure 4. Graphic depicting organization of "impact of overlap" theme into subthemes and patterned statements.

Feedback was identified as another theme within the qualitative data. Fifteen coded statements comprised six patterned statements. Data included information regarding methods leadership attempted to communicate or motivate staff to adhere to EBP tasks. Varied patterned data included computer reminders, reminder barriers, tracking board, patient specific emails, awards, and general staff perception of feedback. Because these statements were closely linked with what leadership expects or desires of the staff, this theme was correlated with the theme of *upholding expectations*, discussed later, but was independently categorized. No subtheme was established for this theme. Figure 5 illustrates the organization of the *feedback* theme and patterned statements.
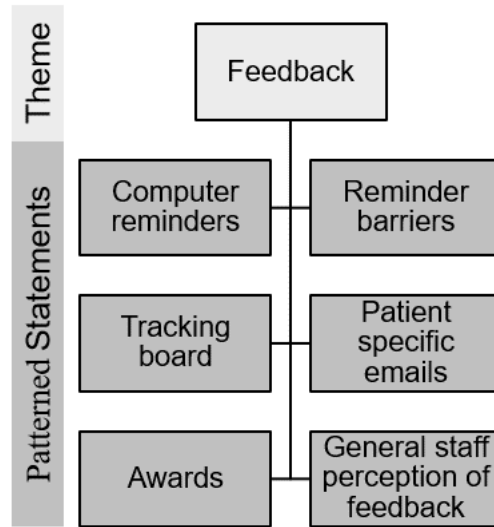
Figure 5. Graphic depicting organization of "feedback" theme into six patterned statements.

The final and largest of the three themes identified in the qualitative data was *upholding expectations*. This theme included 71 coded statements categorized into 13 patterned statements and four subthemes. This theme included data related to the perceived expectations participants felt from other groups or expectations he/she held for others regarding the shared, overlapped EBP tasks. Four subthemes were organized by groups of people or persons. These subgroups were: (a) *self-expectations,* (b) *expectations of others,* (c) *perceived expectations from others,* and (d) *perceived expectations of leadership.* Figure 6 illustrates the organization of the *upholding expectations* theme and four subthemes. Patterned statements were too numerous to capture in the graphic.
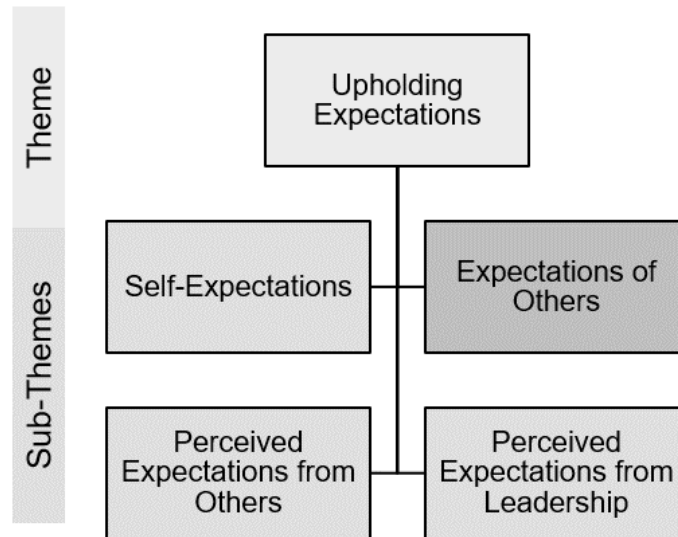
Figure 6. Graphic depicting organization of "upholding expectations" theme into four

subthemes.

Using Yin's (2018) theoretical proposition strategy, categorized data were then

reorganized to address each RQs. Quantitative data addressed RQ1a, identifying *cuff pressure*

management as most frequently reported shared task. Twelve participants listed one to three

various shared tasks, totaling 17 responses. Of these 17 responses, *cuff pressure management*

was recorded 11 times. This data is detailed in the detailed discussion of RQ1a in the following

section of this chapter. The remaining qualitative data was analyzed against RQ1b, RQ2, and

RQ3.

Encouraged by methodology from Suter (2012), the principle researcher developed visual

graphics developed to facilitate the organization by RQ. RQ1b posed the question of how

overlapping expectations impacted adherence. Thus, themes related to expectations such as

upholding expectations and *feedback* from leadership expectations were coded to RQ1b. *Impact*

of overlap directly applied to RQ2. The re-organization of all three themes and subthemes, as

coded to RQs, can be found in Figure 7 below. An arrow depicts how overlapped shared

tasks/actions (RQ1a) and expectations (RQ1b) impact EBP adherence (RQ2). RQ3 is not

pictured here as all qualitative data is later re-organized as TDF domains in this chapter, then

collectively reviewed for implications for practice for transformational strategies in Chapter 5.
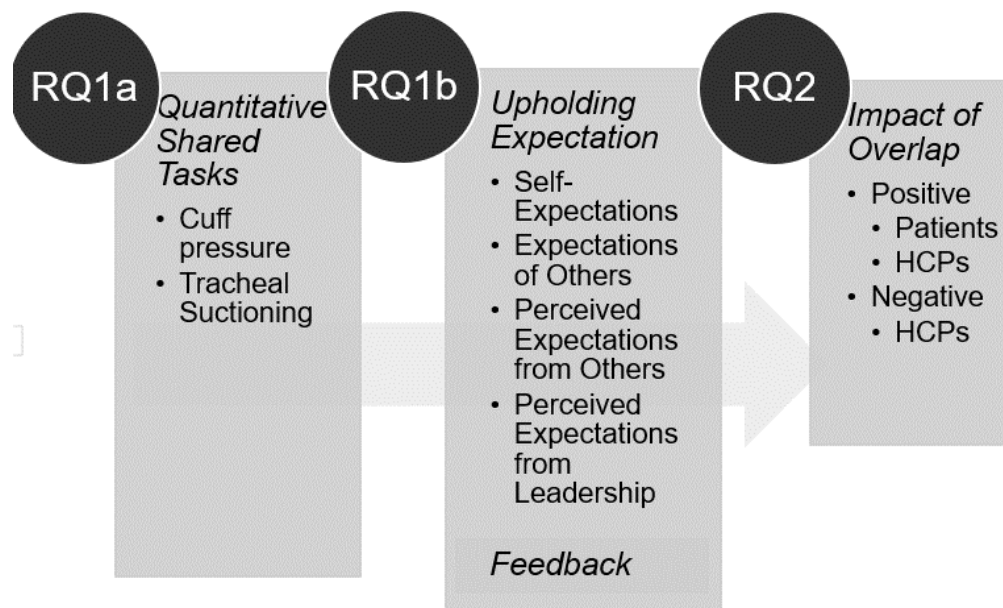
Hence, RQ3 is not included in Figure 7 below.

Figure 7. Graphic showing data by RQ1 and RQ2.

RQ3 asks how the TDF can frame the results of the study. As noted in previous sections,

the principle researcher evaluated the patterned statements in comparison with the TDF domain

definitions as listed in TDF empirical articles described in Chapter 2 (Atkins et al. 2017; Cane et

al., 2012; Lipworth et al., 2013). Patterned statements were matched rather than themes or

subthemes based on the variety of detail within the subthemes and themes. A total of 10 of the 14

domains correlated to patterned statements, listed in order of frequency: (a) *social influence,* (b)

belief of capabilities, (c) *social/professional role and identity,* (d) *belief of consequences,* (e)

memory, (f) *reinforcement,* (g) *emotion,* (h) *skills,* (i) *knowledge,* and (j) *environment.*

In all, an abundance of raw interview data were analyzed. The most identified shared task

was *cuff pressure management* (11 of 17 responses). Three themes various subthemes organized

by patterned statements. *Upholding expectations* and *feedback* themes addressed RQ1b.

Participants perceived overlapped actions and expectations overall positive, *impact of overlap* for

RQ2, including 25 of 27 positive responses. All qualitative patterned statements were then coded

to the TDF domains to address the final RQ3.

Presentation of the Data and Results

Using Yin (2014) and further supported by similar studies in the literature review with

qualitative case study designs (Craig et al., 2017; Goddard et al., 2018), the case study results are

organized by RQs by themes, subthemes, and patterned statements. RQs organize the data and

results findings. Connections and links are described and supported with direct quote excerpts as

appropriate.

   RQ1a: What EBP actions overlap between primary MV/T HCPs? The RQ1a

examines share actions between MV/T HCPs. The list attribute of the question allows a

quantitative poll of which actions or EBP tasks were shared. All participants responded with *cuff*

pressure management being the most frequently identified shared task (11 of 17 responses). All

RNs, including the nurse manager, and RTs indicated this as a shared task. The second most

identified shared task was *tracheal suctioning* at 3 of 17 responses, with *oral care, sedation*

vacation, and *intubation* being listed once. Four participants recorded two or three shared tasks;

hence, the total number of responses included 17 listed shared tasks among 14 participants. The

graph below lists the total number of times the task was listed among all answers, again with *cuff*

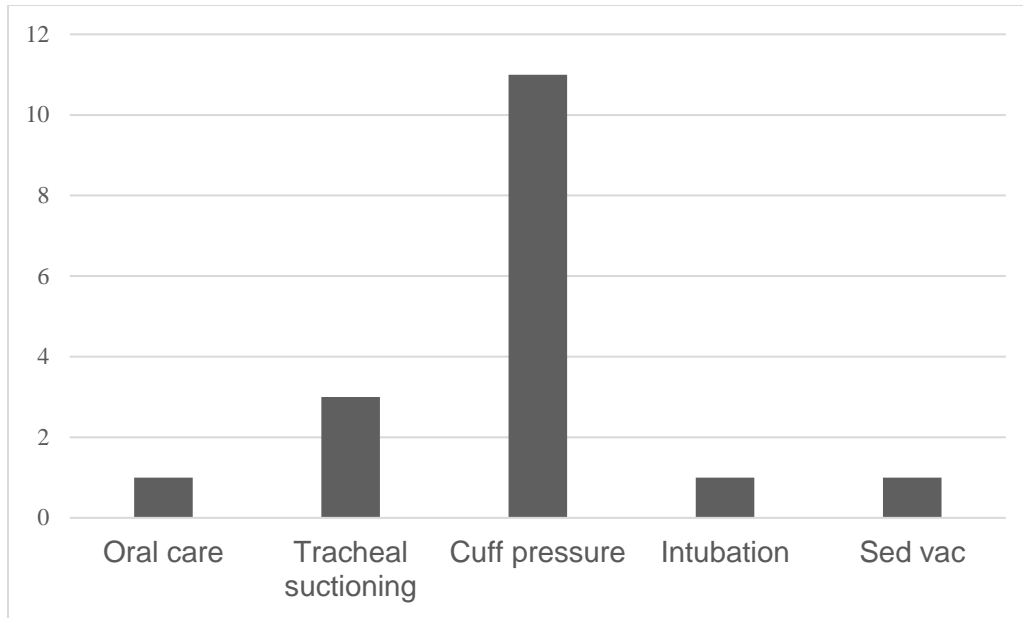*pressure management* being the most frequently stated shared task with 11 of 17 total responses.

Figure 8. Graphical display of RQ1a, noting "cuff pressure management" as most frequently cited shared task.

RQ1b: What EBP expectations overlap between primary MV/T HCPs. The bulk of the qualitative data received addressed RQ1b with 18 of the 25 (72%) patterned statements and 85 of the 115 (74%) coded responses. As previously mentioned, two primary themes emerged from the data after an in-depth analysis to include *upholding expectations* and *feedback*. These are addressed separately, then collectively, to identify the connection between the two themes. Figure 8 illustrates RQ1b data organized to include the two themes and the four subthemes for *upholding expectations*.

Upholding expectations. This theme was the most extensive collection of data, totaling 72 coded responses and 13 patterned statements. As noted in previous sections describing methodology, this theme includes four subthemes:

- *Self-expectations,*

- *Perceived expectations from others,*

- *Expectations of others,* and

152

- *Perceived expectations from leadership*

Some overlap between subthemes exists and discussed as it applies to each.

Perceived expectations from leadership included the highest number of coded statements of the four *upholding expectations* subthemes. Twenty-four coded statements, with at least one coded response from all 14 participants, were organized into this subtheme. Two items on the interview questionnaire related to leadership expectations (items 6, 8). The interview questionnaire item 6 asks "can you describe what expectations you feel others have for you and your HCP discipline? This may be from other primary HCPs, hospital leadership, and/or your profession." Item 8 asks about policy awareness that may define MV/T tasks and assignment.

The term *leadership* was not explicitly defined for the participants in the questionnaire open to self-interpretation. Based on the responses, leadership meaning included unit manager, unit educator, or infection control committee members. Leadership also included general expectations such as auditing/reporting practices facility policies. No participant directly identified specific expectations of leadership; however, all participants responded regarding policies that may exist regarding EBP MV/T overlapped tasks and expectations. Reporting practices are included in the *feedback* theme, though these linked to leadership expectations. Therefore, *perceived expectations from leadership* included three patterned statements, all related to policy. These patterned statements and number of coded frequencies were as follows: l*ack of clarity on policy existence* (13), *assumption of policy* (8), and a *desire for policy* (3). Figure 9 below summarizes these three patterned statements coded as *perceived expectations from leadership*, listed by participant. Participants may have included one, two, or all three.
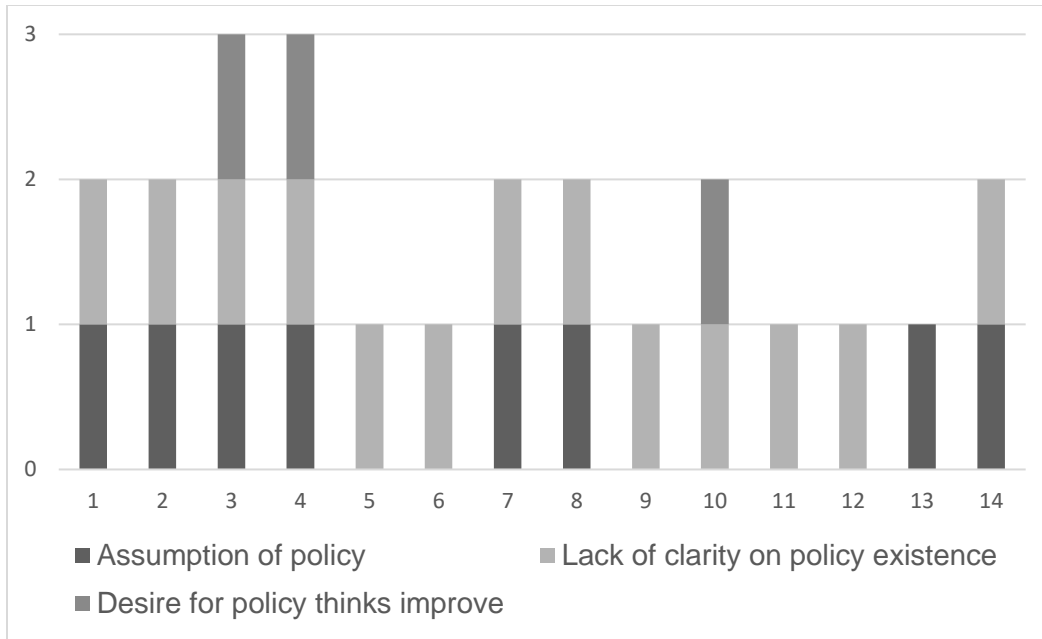
Figure 9. Subtheme "perceived expectations from leadership" number of coded responses by patterned statements, by participant.

Most of the responses were coded as *lack of clarity on policy existence*, with 13 of 14 participants including all but the UAP participant, providing interview data included in this patterned statement. Direct quotes from these patterned statements were straightforward when asked if he/she were aware of policies (Item 8) and include "That's a good question. I'm not sure" (RT1) or "Not to my knowledge" (RN5). Furthermore, one third of participants (8 of 14)responded with statements categorized as the a*ssumption of a policy*. These included statements such as "I'm sure there is (a policy) but I've never seen one" (RN7). Interestingly, seven of the eight participants' responses included both *lack of clarity on policy existence* and *assumption of a policy*. An example of a statement that would be coded as both lack of clarity and assumption of a policy is "No, I don't know (if there is a policy) but there probably is somewhere" (RN2). Three participants stated a desire to have a policy (3 of 14). Statements such as "I don't know if we have one, but it would be helpful" (RN3) were coded as both *lack of*

policy clarity and d*esire for policy.* Again, overlap was noted in two of three participants, including statements coded for all three such as in RN3's response, "I don't know of any policies. For sure there are none for changing the equipment, but I definitely think it would help. Who knows, there probably is for some tasks."

  Perceived expectations from others was identified from 10 of the 14 participants. Twenty-two coded statements were organized into six patterned statements:

- *Communication for shared task;*

- *Negative patient outcomes threaten professional identity;*

- *Fear of negative peer impression;*

- *Knowing limitations;*

- *Holding each other accountable*; and

- *Self- and peer-audits*.

The principle researcher also linked the patterned statement of *self- and peer-audits* to the theme *feedback* and will be discussed with both themes accordingly. Item 6 asked "Can you describe any expectations that you feel others have of you and your HCP discipline in the care of MV/T EBP? This can be from other primary HCPs, hospital leadership, and/or your profession." Figure 10 below summarizes these six patterned statements coded as *perceived expectations from others*, listed by participant. Not all participants included statements related to this subtheme while other participants may have included one or as many as four.
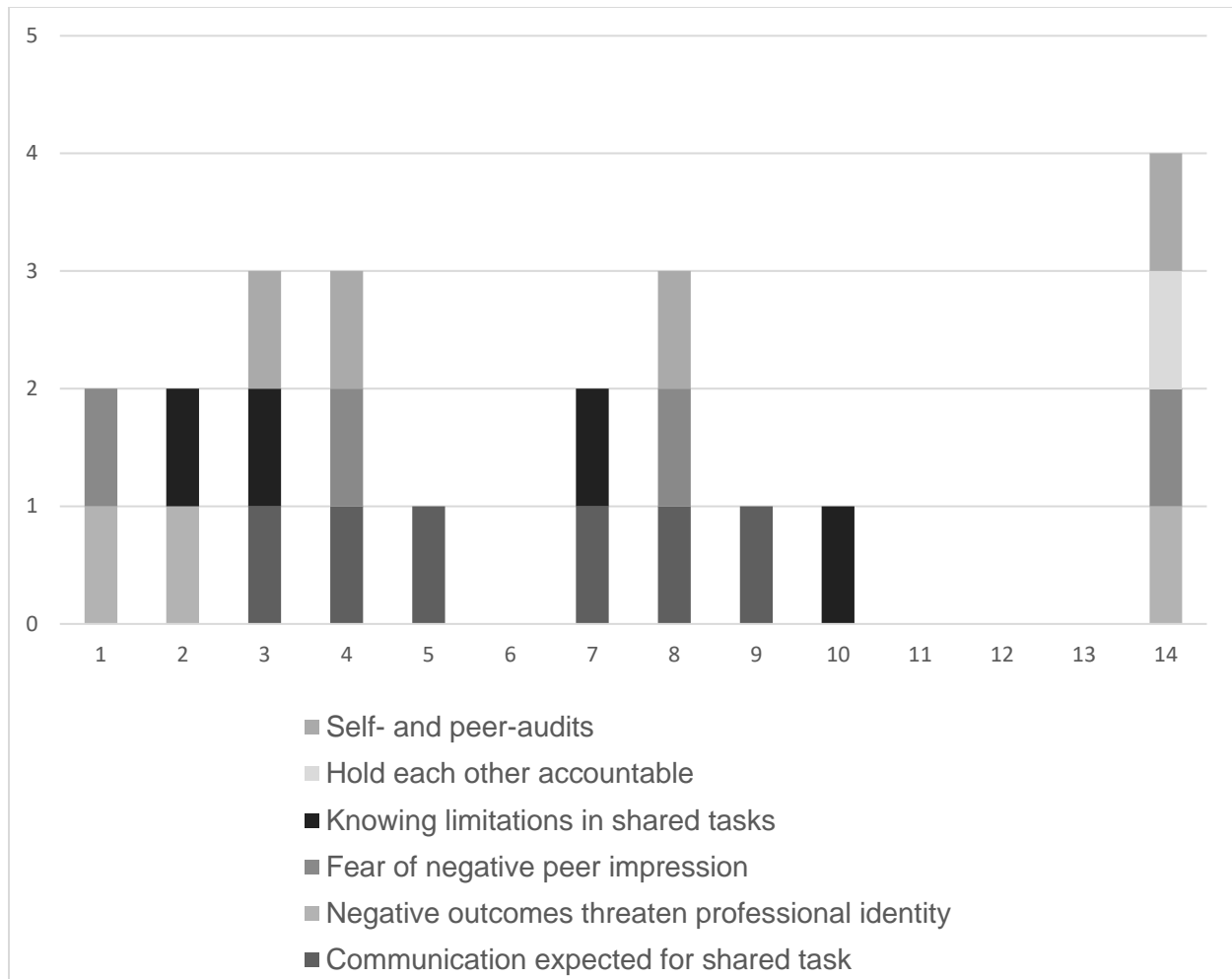
Figure 10. Subtheme "perceived expectations from others" number of coded responses by patterned statements, by participant.

    Communication statements was identified from six of the 14 participants. Statements from participants included "After adding air to the cuff pressure, I have to call to let the RT know" (RN3) and "Assessing the cuff pressure is definitely the RT's thing but I'll listen for (a cuff leak) and if I hear it then I'll call RT after I fix it. They have to know I messed with it" (RN5). Though cuff pressure management was identified by most participants as shared, participants also indicated it "belonged" to RT (RN6). RT1 confirmed this expectation of RT ownership despite the task being shared, stating: "Some nurses are better than others at checking it, but it really is our responsibility. I don't think some nurses think about it so it really on us

(respiratory therapists)." These responses primarily were made by RNs and validated by the RN

manager. Despite the overlap, the ultimate responsibility was the RN; therefore, the RNs felt

they were expected to communicate any action that performed regarding cuff pressure

management "owned" (RT1) by respiratory therapists. Thus, the principle researcher designated

these responses as perceived expectations from others based on this expectation to communicate.

Knowing limitations, *fear of negative peer impression, and self-/peer audits* were the

second most frequently occurring statements in the subtheme of *perceived expectations from*

others. All three had four of 14 participants responses. *Knowing limitations* is discussed first.

Similar to *communication*, RN responses indicated an expectation of their shared cuff

pressure management task was to *recognize limitations* with the task as the nonowners. For

example, one participant stated, "Like with cuff pressure, I know if there's a leak I can only add

1cc, that's it, anything more than that to fix it I need to call RT because, you know, it's their

(endotracheal) tubes (RN2)." This expectation of cuff pressure RT ownership with a shared, yet

lesser responsibility, was validated by the nurse manager. She stated, "RT really does it (cuff

pressure management assessments), but nursing will check too, but it's not their responsibility.

So, they (RNs) needs to reach out if anything is out of the ordinary because it's not our (nursing)

expertise." Based on the interpretation of the nurse statements, the principle researcher identified

these expectations to be perceived from the owners (RT) in the shared tasks.

Fear of negative peer impression, mentioned by four of 14 participants, was supported by

direct quotes such as "You can just tell if things have been done when you come behind another

nurse so you want to make sure that it's all taken care of" (RN7). Another participant noted a

sense of embarrassment if a patient was diagnosed with VAP stating, "You know, people know

who the only ICU nurses that have taken care of that patient, so it makes you look bad" (RN1).

Peer-/self-audits was equally identified in the data responses (3 of 14 participants). Linked to the theme of *feedback* but ultimately included in the *upholding expectations*, this patterned statement included any coded data related to the process, perceptions, or impact these audits have on overlapping EBP tasks. One RN identified the impact of peer-audits stating, "If we don't think someone's looking, it's kind of like [shrugs shoulders]. I know that's bad, but it's true. I'll do it if I know another nurse will be reviewing my charts. I don't want to look bad" (RN4). Another RN similarly stated, "It (peer audits) definitely focus our attention to get the tasks done, but I also don't want to look bad" (RN3). The RN manager also noted *peer-/self-audits* as an important tool to motivate the staff to ensure EBP tasks are completed, stating it "helps us hold each other accountable" (RN Manager). Based on the close association between motivation to complete task and the fear of negative impression as demonstrated by two of three coded statements, *peer-/self-audits*, though linked to *feedback* which is discussed later, was ultimately classified under the theme of *upholding expectations*.

Slightly less participants (3 of 14) indicated *negative patient outcomes threaten professional identity,* which related closely to *fear of negative peer impression.* Both patterned statements included coded participant data expressing a negative emotion based on the perceived thoughts of others; however, *negative patient outcomes threaten professional identity* were related to reflecting poorly on the perceived image of the discipline rather than personally. RN2 stated, "No one wants anyone to have a VAP, and so we all do what we are supposed to do in order to save someone from VAP. It looks bad for all of us, really."

Expectations of self, the third subtheme of *upholding expectations* was identified in 13 participants with 13 coded statements and subdivided into three patterned statements. The majority of data were coded statements related to the *duty* one holds as an HCP to the patient.

Participant statements referenced MV/T tasks as "helping patients is just what we do" (RN2), indicating adhering to shared tasks are aligned with the expectations to protect the patients. Two participants stated altruistic motivation such as "we just get it done, you know, for the patients" (RN4) and "we all help out for the patients" (UAP1). These statements were classified into patterned statements of *duty* as they describe an altruistic motivation and/or dedication to ensuring quality patient care. The second most frequent coded statement in this group was a higher expectation of self. Five participants were noted to say very similar quotes related to "I don't know what others do when I'm not here, but I always [complete task]" (RN4, RN5, RT2, RN manager). Clarification through member-checking validated this meaning with one participant (RN4). This participant clarified her statement to indicate higher self-expectations rather than derogatory towards others' quality of care. The RN manager also validated this response by referring to herself when she accepts a patient assignment, again saying, "I know that not all nurses check the cuff pressure, but I definitely do, because, ultimately, patient care if my responsibility as a nurse." Though no participants stated they felt any shared task was outside of their responsibility, the RN manager stated, "I have heard nurses say that it's RT's job, or someone else's, but it really is the nurses' job. And, they have to handle it." Figure 11 illustrates the *self-expectation* responses by patterned statement and by participant.

Figure 11. Subtheme "self-expectations" number of coded responses by patterned statements, by participant.

Expectations of others is the last of four subthemes organized to *upholding expectations.* Eight participants of 14 included similar statements regarding a varied expectation of others completing EBP shared and overlapped tasks. At least one participant from each discipline, excluding doctors, mentioned the expectation of sharing task responsibility for *cuff pressure management* or *tracheal suctioning* is dependent on the assigned caregiver. Quotes such as, "I don't assume RT will do it because some people do it (cuff pressure management) if they've been here longer but others might not" (RN7). An RT participant added expectations change based on the RN assigned "because I know some people are better at checking cuff pressures than others, so I pay more attention to those patients if I know the nurse isn't someone who does it" (RT1).

Feedback. The second theme of *upholding expectations* addressing RQ1b was *feedback*. This theme included 15 coded statements over six patterned statements. Figure 12 shows the six patterned statements responses over participants. All statements were related to methods of

feedback the participant is aware of regarding MV/T EBP tasks and/or how feedback methods impact adherence to the tasks. The interview questionnaire (Item 9) asked about reporting practices (i.e., feedback, recognition, discipline) related to EBP tasks or MV/T outcomes that influence EBP adherence. Collected data from this question included methods used by leadership to track, communicate, or attempted to encourage compliance with EBP adherence; thus, this subtheme was classified as *upholding expectations*.
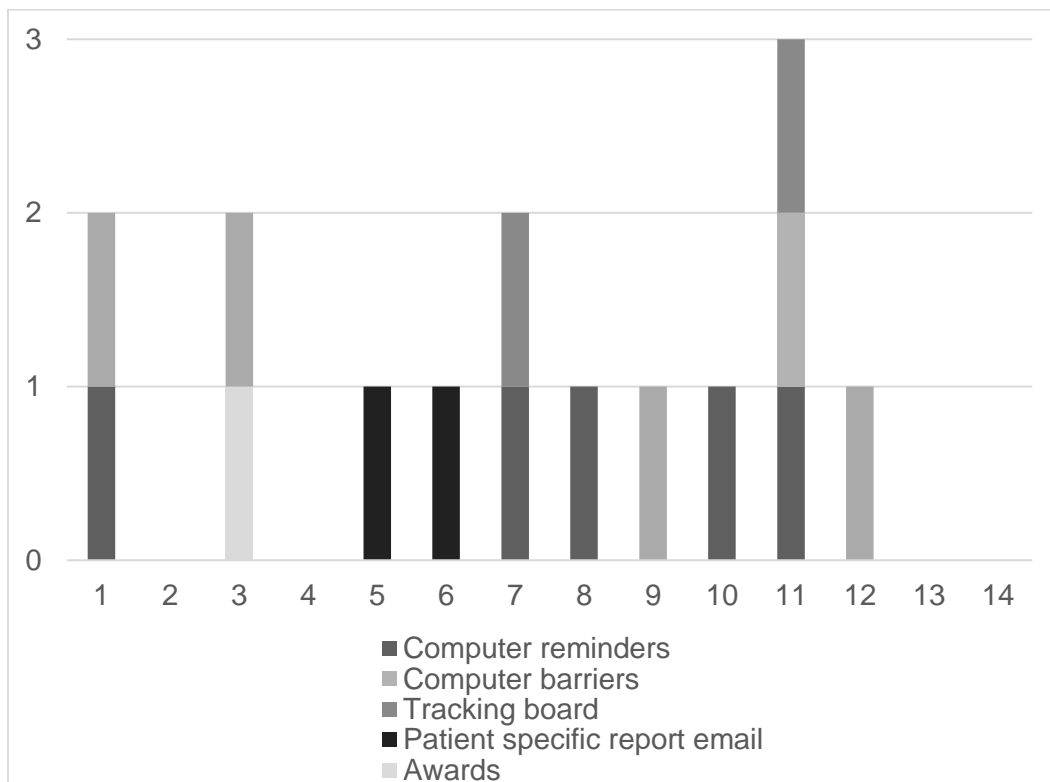

Figure 12. Subtheme "feedback" number of coded responses by patterned statements, by participant.

Overall, various methods of feedback from leadership were identified as a decisive factor impacting EBP adherence. Feedback types varied to include a general tracking board counting down days since last VAP infection as well as rewards for lengthy streaks without VAP. Patient-specific emails were also sent in the event of an EBP preventable disease, such as VAP. These

emails included patient name, names of staff who cared for the patient, and the audit of EBP care

tasks per the electronic chart. Any data related to a negative emotion (embarrassment, fear) from

these emails were coded in *perceived expectation from others*; however, data related more

specifically to the emails as a method of feedback was coded under *feedback*. Because of the

close association, these categories are linked in the visual representation of all the data and will

be discussed in Chapter 5.

The tracking board was visible in the hallway near the breakroom where all staff lockers

were kept. An image of this tracker can be found in Appendix D. Though participants felt the

tracker was positive and encouraged adherence, some staff express uncertainty regarding if the

tracker was updated regularly (RN7, MD1). Awards were also noted by a participant (RN3) as a

motivator and included specialty coffee in the breakrooms. Five participants identified

computerized reminders for EBP tasks improved adherence; however, one participant (MD1)

stated it was both beneficial and restricting. This participant noted multiple reminders can be a

barrier to care due to the excessive number of reminders.

Summary of findings for RQ1b. Figure 2 illustrates the organization of the data

addressing RQ1b. Two primary themes emerged to include *upholding expectations* and *feedback*.

Upholding expectations included four separate subthemes while *feedback* was singular. Some

links between the themes were identified, particularly surrounding leadership expectations, peer-

auditing, and perceived expectations from others. Through analysis of RQ1b-associated data,

unclarity on any policies regarding EBP (*leadership expectations*, 13 coded statements), a sense

of duty to the patient (*self-expectations*, 12 coded statements), variable expectation of others

(*expectations of others*, 8 coded statements), and negative patient outcomes threaten professional

identity (*perceived expectations from others*, 6 coded statements) were identified as the most frequently coded items from *upholding expectations*.

RQ2: How do the HCPs perceive overlap of actions and expectations between primary MV/T HCPs impacts EBP adherence? Data collected to address this RQ resulted in many participants expressing a positive or negative impression of overlap on EBP adherence with impacts on both the patients and/or the HCPs. A total of 27 coded responses were collected under the theme *impact of overlap* categorized into two subthemes of *positive* and *negative*. *Positive* was then subdivided into *patient* and *HCP*. Figure 3 illustrates the organization of the data. The interview questionnaire included two items specifically aimed to elicit data to address RQ2 (Items 5, 7; see Appendix A). Item 5 asked how item 4 impacts adherence. Item 7 asked if these expectations impact the adherence to MV/T EBP tasks/

All the participants expressed at least one coded statement that was categorized as a positive perception of overlap on EBP adherence. These statements included benefits for the patients and for the HCPs. Most participants (13 of 14) expressed a perceived benefit to the patient. These participants expressed general responses such as "I think the overlap helps patients" (RN1), or participants were more specific, "The sharing is good because if we're not on the unit, they (nurses) are not afraid to deal with it without making the patient wait" (RT1). Overlap was also noted to positively impact HCPs. Two participants (RN5, MD1) (2 of 14) stated the overlap improves the non-primary HCP's experience with the task, increasing his/her skill. MD1 stated "I think allowing RT to do the intubations gives them experience, and it doesn't hurt anything."

Two participants (RN2, RN3) (2 of 14) noted a negative perception of overlap related to the HCPs. Both participants specifically noted overlap potentially contributing to a knowledge

deficit regarding a shared task or skill. For example, RN2 stated because RT was "responsible for cuff pressure management, I really don't know it that well." Both participants (RN2, RN3) who expressed at least one negative coded statement also included one or more positive coded statements, demonstrating mixed impact on EBP adherence. No coded statement was attributed to the perception of negative patient outcomes related to overlapped EBP tasks.

RQ3: How can the TDF social domains inform the findings from primary MV/T HCPs regarding overlapping EBP actions and expectations to contribute to the growing body of knowledge to support HCP transformational change? The principle researcher posed RQ3 to frame all qualitative data using TDF domains, with the intent to inform the larger body of transformational knowledge. As described in previous sections of this chapter, all patterned statements within the themes and subtheme were categorized to the one of the TDF domains using the definitions and descriptions provided within TDF literature (Cane et al., 2012; Lipworth et al., 2013). Of 25 patterned statements and 115 coded responses analyzed in all the participant interviews, 10 of the 14 TDF domains were. Figure 13 illustrates the spread of coded responses by TDF domain, with top three domains being *social influence* (26), *belief of capabilities* (26), *and social/professional role and identity* (21). Environment was the lowest with only one coded response. Domains were ranked by number of coded statements to capture multiple coded statements made by individual participants.
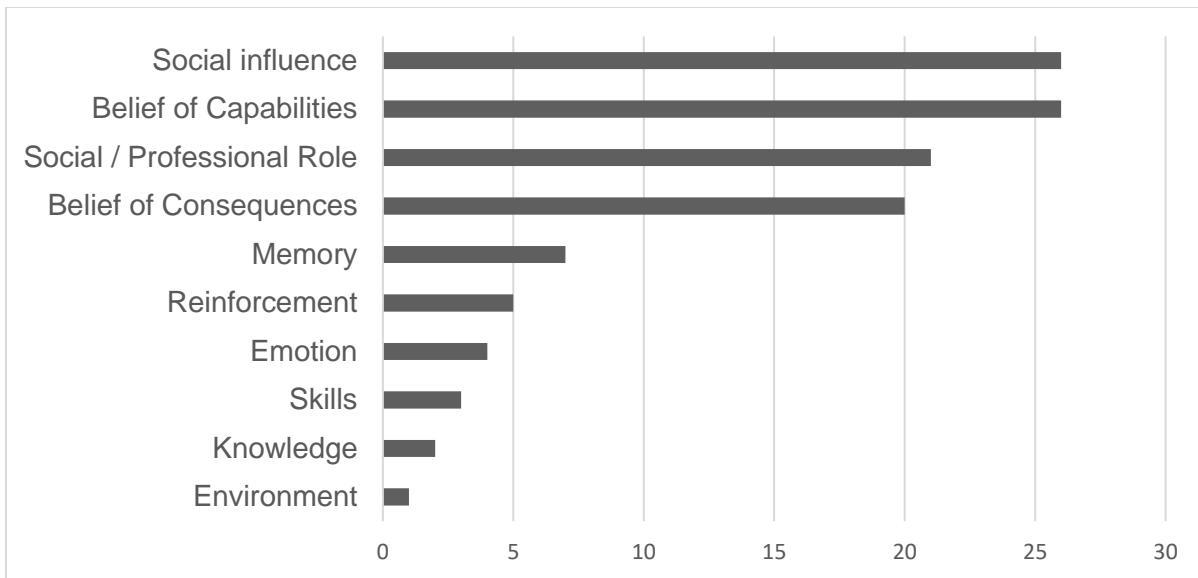
Figure 13. TDF domains identified from number of coded responses by participants.

The *social influence* domain is defined as "interpersonal processes" (Lipworth, 2013, p. 7) impacting another's thoughts or behaviors. Patterned statements coded to this assigned domain included *policy*, *peer-/self-audits, and holding each other accountable*. Participants' coded statements regarding policy indicated that despite clarity of a policy's existence, they felt expected to share tasks, particularly cuff pressure management, among the RTs and RNs. One RN stated, "I don't know if there's a policy, but I think sharing that task between us (RN) and RT is just a standard that we've set upon ourselves. We're (RN) already at the bedside so I think they expect us to do it" (RN6). This perceived expectation from his/her peers impacted the nurse to adhere to the cuff pressure management task. *Peer-/self-audits* and *holding each other accountable* was also identified as falling into the *social influence*. Participants vocalized a change in behavior as a result of knowing that peers would be checking her charts to see if EBP tasks had been done (RN 4). The nurse manager validated this effectiveness of peer audits to encourage adherence, stating the nurses holding each other accountable. In all instances, the

participants indicated a behavior change resulting in increased adherence to the task based on social influences from peers.

Beliefs about capabilities TDF domain is the belief or confidence in the individual's ability to complete a beneficial action (Lipworth et al., 2013). Confidence in the task acts as a facilitator while lack of confidence can be a barrier to implement EBP (Lipworth et al., 2013). Twenty-six participants responses were coded to this domain. *Varied expectations of others* was the most frequently coded statement in this TDF (8). Participants indicated his/her perceived need to complete the shared EBP task was partially based on individual shared HCP. Participants stated they "got to know" (RN5, RN6, RT1, RT2) their colleagues from other disciplines. The participants reported implementing shared EBP tasks based on if colleagues of the same task were "not trusted" (RN5), "comfortable" (RN7), or "not comfortable" with the task (RT1).

The perceived expectation to *communicate* was commonly noted (6) as a factor on implementing shared tasks. The RNs, RTs and nurse manager agreed cuff pressure management was shared, but ultimately owned by RTs. Some RNs indicated some reluctancy in the shared cuff pressure management task but was felt confident if communication could be established with RT to evaluate the RN-completed task later (RN3).

Superior self-expectations (5), or expecting more quality care of themselves, was categorized as *belief in capabilities*. Participants with these coded responses were confident they completed shared EBP tasks compared to other staff members who might not. Conversely, a lack of confidence thus *knowing their limitations* (4), was also coded as *belief in capabilities*, as it impacted the participants' willingness to share a task (RN2). *Teamwork* was coded to this TDF domain, as participants expressing the shared tasks, or teamwork, was beneficial to the patients. Participants believed the collaboration improved the quality of patient care.

Social/professional role and identity domain is defined as acting in accordance to a set of behaviors that align with a group of people (Lipworth et al., 2013). Twenty-one coded statements were included in this domain, making it the third most cited domain. A sense of *duty* was strongly represented in this data set with participants reporting a responsibility to deliver quality care when asked about adhering to EBP tasks. Participants reported adhering to shared tasks because they felt their role as HCPs was to be a "protector" (RN2) or "patient advocate" (nurse manager). Some participants identified *negative patient outcomes* and patient specific emails about patients who contracted VAP as threatening the identity of the HCP. One participant stated, "it looks bad on us" (RN1) when a patient suffers from preventable illness like VAP. Finally, several participants stated a *desire for policy clarity*. These participants felt that defining the expectations among the disciplines would facilitate adherence. These comments were linked to *social/professional role and identity* as nurses expressed a desire to do what was expected of them from leadership.

The TDF domain, *belief of consequences*, includes the belief that one's actions will result in a particular outcome. In this study, 20 coded statements were made by participants referring to the belief that collaborating on EBP tasks among HCP disciplines improves patient quality care and patient outcomes. Specifically, participants felt adhering to shared tasked increases *continuity of care* and promotes *general teamwork*, associated with improved patient outcomes.

Seven participants reported statements aligned with the *memory* TDF domain as a factor in adhering to EBP tasks. All responses were related to electronic computer charting and the tracking board. *Reinforcement*, or reward for desired behavior (Lipworth et al., 2013), was identified as a contributor to shared tasks. *Emotion* is defined in the TDF as how emotions can influence behavior. In this study, four participants reported adhering to EBP tasks to avoid

167

potential anxiety resulting from embarrassment from either peer audits or peers noticing gaps in care in subsequent shifts (RN1).

Finally, *skills* and *knowledge* were identified as motivating participants to adhere to tasks. Four statements related to skills, the ability to complete a task through learned experience (Lipworth et al., 2013), motivated participants to adhere to EBP shared tasks. These participants stated completing shared tasks improves the skills of the non-dominant discipline (MD1, RN2). Similarly, two statements were categorized as *knowledge*, motivating participants to either adhere if he/she felt knowledgeable in the task or not adhering if he/she felt less knowledgeable.

After full analysis of the 115 coded data, 10 TDF domains were identified. The top four domains by coded statement frequencies in order of highest to lowest numbered responses:

- *Social influence* (26),

- *Belief of capabilities* (26),

- *Social/professional role and identity* (21), and

- *Belief of consequences* (20).

RQ3 asks how the data can be framed using the TDF domains. Using the TDF domain definitions from Lipworth et al. (2013), and in reference to the raw interview data, and validation methods of member-checking, RN manager interview data, and evidence of tracking methods, TDF domains were assigned. The TDF domains provide a frame to influencers to MV/T EBP adherence. Chapter 5 will discuss these results and draw conclusions from the findings.

Chapter 4 Summary

Currently, literature shows a deficiency in EBP adherence leading to unnecessary MV/T patient risk. Overlapping roles of primary HCPs has also been shown to contribute to this lack of adherence. Though the TDF has been successful in identifying strategies to address adherence

issues, little data exists in the MV/T population. This study aimed was designed to add to this body of knowledge by exploring this potential overlap in actions and expectations, specific to social TDF domains as they relate to roles and identity. The qualitative case study utilized a convenience sampling of one ICU. A response rate of 14 of 16 of all staff over two shifts provided significant data. This data was analyzed to include coded statements, organized by patterned statements. These statements were then organized under themes of *feedback* and *upholding expectations*, with four subthemes. Analysis and presentation of these findings were discussed and further organized by RQs.

RQ1 was split into RQ1a and RQ1b to separate the overlapping actions and expectations. RQ1a addressed what actions were shared. The majority of participants (11 of 14) reported *cuff pressure management* as the primary shared task. As a result, many examples within the interviews are specific to this task. The bulk of the interview data addressed RQ1b, shared expectations. Twenty-five patterned statements and 115 coded data was attributed to this question, demonstrating a wide variety of expectations. Further analysis of coded data, arranged by TDF domains, address the final RQ, revealing 10 of 14 domains impacting adherence to MV/T EBP.

Chapter 5: Conclusion and Discussion

Introduction

Over one million individuals this year will require advanced respiratory therapies allowing them to maintain proper ventilation necessary for life (Cheung & Napolitano, 2014). Patients rely on healthcare providers (HCPs) to provide safe, quality care to maximize health outcomes. Despite an abundance of research-driven guidance and recommendations, or evidence-based care (EBP), the uptake and adherence to best practices are often stalled or never

169

translated from research to the patient bedside (Jylha et al., 2017; Tucker, 2019). This lack of EBP adherence in the advanced respiratory population results in life-threatening risks and economic loss often preventable when research-based guidance is followed (Fischer, 2016; Guthrie et al., 2018; Jannson et al., 2018; Jun et al., 2016; Wolfensberger et al., 2018).

Adhering to EBP often requires the HCPs to change previously learned and well-established behaviors (Sim, 2015; Tucker, 2019). The dynamic change required for complex behavior change requires the learning and relearning of new perspectives, aligning with transformational learning (Mezirow, 1991; Sims, 2015). A detailed review of the literature detailed in Chapter 2 identified literature, identified various barriers, many focusing on a lack of knowledge as the primary barrier (Jun et al., 2016). However, some articles specific to the MV/T population found unique obstacles related to the overlapping roles of the primary bedside HCP disciplines of nursing (RNs), respiratory therapists (RTs), and physicians (MDs) (Curtis et al., 2017; Goddard et al., 2018; McConnell et al., 2016). These barriers aligned with the two social domains of the Theoretical Domain Framework (TDF), a simplified model for change (Cane et al., 2012). The TDF has been successful in addressing EBP adherence in other populations; however, it was only identified in one article in the literature review (Goddard et al., 2018).

Thus, the principle researcher three research questions (RQs) to study using a qualitative case study design grounded in the supporting literature of Chapter 2. The RQs are:

- RQ1a: What EBP actions overlap between primary MV/T HCPs?
- RQ1b: What EBP expectations overlap between primary MV/T HCPs?
- RQ2: How do the HCPs perceive overlap of actions and expectations between primary MV/T HCPs impacts EBP adherence?

- RQ3: How can the TDF social domains inform the findings from primary MV/T HCPs regarding overlapping EBP actions and expectations to contribute to the growing body of knowledge to support HCP transformational change?

The study was conducted in a small critical care unit in a southeastern U.S. hospital with 14 staff members within the three HCP disciplines of RN, RT, and MD. A semistructured interview questionnaire was used, developed for this study, to collect qualitative data. Chapter 3 details the methodology, while Chapter 4 details the analysis of the findings and results. Three major themes in the literature exist. A summary of the findings are discussed in this chapter along with a discussion of the results, how the results relate to the literature, limitations of the study, implications for clinical practice, and recommendations for further research.

Summary of the Results

Conceptual framework review. Theory and findings from the research, coupled with the principle researcher's expertise in nursing and advanced respiratory care, provided the foundation of the conceptual framework of this study (see Figure 1). The conceptual framework encompasses the patient transition between the presentation of MV/T healthcare needs and patient outcomes. Between the patient transition is a three-ring circle. Three overlapping circles represent the shared actions and expectations of the three primary HCP disciplines at the center. Surrounding the HCPs are barriers and facilitators impacting HCP ability to adhere to EBP. The most outer circle, the TDF, frames the EBP. The TDF frame represents how the TDF, emphasizing social domains, can be used to explore factors related to HCP overlap in the MV/T population. Figure 1 provides a visual for the study's conceptual framework.

Significance review. The significance of addressing the RQs is vital to patients, families, and the overall community. Again, with over 1 million intubations per year (Cheung &

Napolitano, 2014), yet only 14% of EBP incorporated into practice (Tucker, 2019), places these patients at risk for life-threatening risks and infections, such as ventilator-associated pneumonia (VAP) (Timsit et al., 2017) or tracheostomy-specific risks like vocal cord paralysis (Morris et al., 2013). Rates of VAP are estimated to impact up to 67% of all intubated patients (Timsit et al., 2017), costing up to $40,000 per diagnosis. Tracheostomy adverse events, similarly, affect approximately 75% of all patients and can result in $58,766 per incident in healthcare costs and lost worked days (Fisher & Oster, 2017). The potential impact of improving EBP adherence would reduce preventable harms and improve MV/T patient outcomes (Khan et al., 2019; Mah et al., 2017; McGrath et al., 2017; Nyeo et al., 2016; Sousa et al., 2019).

Review of literature. Availability of quality research has led to EBP guidelines in the MV/T patient population from highly regarded organizations such as the Infectious Disease Society of America, the American Hospital Association, and The Joint Commission (TJC) (Klompas et al., 2014; Mitchell et al., 2013). This body of evidence has determined EBP improves patient outcomes (Khan et al., 2019; Mah et al., 2017; McGrath et al., 2017; Nyeo et al., 2016; Sousa et al., 2019). However, EBP adherence rates are often too low or inconsistent to result in positive patient results found in research (Fisher & Oster, 2017; Khan, 2018; Timsit et al., 2017; Welton et al., 2016). Lack of adherence is not unique to the MV/T population (Jun et al., 2017). Still, the unique and complex healthcare needs of the MV/T patient requiring multidisciplinary care may be a contributing factor to a lack of EBP adherence (Guthrie et al., 2018; Khan et al., 2019; Nyeo et al., 2016).

Patients with endotracheal or tracheostomy tubes require specialized, holistic care from a variety of HCPs like specialty physicians (MD), respiratory therapists (RT), rehabilitation providers to include speech therapy (ST), physical/occupational therapists (PT/OT), infection

172

control specialists, and a wide variety of nursing professional such as the staff nurses (RN) and specialty nurses like wound-care nurses, and nurse practitioners (Abode et al., 2016; Dixon et al., 2018; Khan et al., 2019; McConnell et al., 2016). The primary HCPs (RN, RTs, and MDs) can share tasks and actions based on overlapping scopes of professional practices leading to confusion regarding roles and responsibilities in completing specific EBP tasks (Guthrie et al., 2018; Khan et al., 2019; Nyeo et al., 2016). This lack of clarity among HCP roles or expectations may lead to lapses in care (Goddard et al., 2018), preventing the implementation of EBP demonstrated to improve patient outcomes.

In the literature review, mainly emerging from the mixed-methods and qualitative research, the principle researcher noted a commonality. Four research articles had used the TDF to address EBP (Craig et al., 2017; Curtis et al., 2018; Debano et al., 2017; Goddard et al., 2018), and of these studies, all noted factors impacting adherence that were related to the two TDF social domains: *social/professional role and identity* and *social influence*. Upon review of the domain definitions, the principle researcher re-examined the literature included in Chapter 2. Although only one MV/T specific study used the TDF (Goddard et al., 2018), many researchers noted factors that were closely related to the social domain definitions provided by Cane et al. (2012). These included:

- Peer or leader support (Klompas et al., 2014; McGrath et al., 2017; Wolfensberger et al., 2018);
- Shared duties, decision making, or role ambiguity between RN, MD, and RT (Abode et al., 2016; Guthrie et al., 2018; Klompas et al., 2013; McConnell et al., 2016; Southcott et al., 2019; Welton et al., 2016), and;
- HCP empowerment (Khan et al., 2019; Mah et al., 2017).

173

As a result, the principle researcher posed the study RQs and methodology.

After the case study implementation and the analysis of results, the principle researcher executed a gap literature search using similar methods utilized for Chapter 2. The only modification was to the date range to target any new literature published between Chapter 2 development and after study implementation, approximately nine months. Using varying combinations of keywords: *Theoretical Domain Framework (TDF)*, a*dherence*, e*vidence-based practice (EBP),* with the date ranges of 2019–2020, 35 articles were retrieved and reviewed through abstract screening. Of all the abstracts, one article was excluded based on the lack of TDF. Eighteen targeted various HCP behavior changes, such as prescribing practices or hand hygiene compliance. Fifteen explored patient behavior change, many related to promoting physical exercise or enhance nutrition. One included both patients and HCPs. No abstracts included respiratory topics. Thus, no new literature was considered in this study discussion.

Review of methodology, analysis, and findings. This study was a qualitative case study conducted to explore one ICU staff's experience with HCP overlap of actions and expectations as it applies to the posed RQs. Using a convenience sample of all three HCP disciplines, including the subgroup of unlicensed assistive personnel (UAP), the principle researcher included 14 participants. Of 16 staff meeting the inclusion criteria, 14 volunteered in the study for a response rate of 88%. All disciplines were represented to include eight RNs, two RTs, two MDs, one UAP, and one nurse manager. The distribution of the sample closely resembled the staffing matrix of the average shift.

Interview data gained from the interview questionnaire created for this study (see Appendix A) during private or semi-private interviews with the participants on the unit during break times. The average interview time was 16 minutes and 5 seconds. All audio was recorded

and transcribed by the principle researcher. Data were manually coded, then validated for patterns using NVivo software. Patterned statements were grouped by theme and subtheme, then arranged by RQ. RQs 1a, 1b, and 2 were addressed through the organization and separation of data. RQ3 included all matching all qualitative patterned statements with the TDF domain definitions (see Appendix E; Lipworth et al., 2013). Member-checking included four participants. The principle researcher captured images of the VAP tracker posted on the wall as well as an interview with the nurse manager to triangulate data as appropriate (see Appendix D).

The analysis of 117 minutes of data from 14 participants resulted in 115 coded statements and 25 patterned statements. Data were organized by subtheme, theme, and then by RQ. Quantitative data was obtained through list-attribute questions, particularly addressing RQ1a, identifying *cuff pressure management* as the most shared task by 65% of all participants. Qualitative data was organized into three themes, as each related to either RQ1b or RQ2. RQ1b addressed expectations of overlap, resulting in two themes: *upholding expectations* and *feedback* (see Figure 2). The third theme addressed RQ2, the *impact of overlap* (see Figure 2). Figure 7 illustrates the flow from RQ1a, *what tasks overlap the HCP disciplines*, to RQ1b, *what expectations overlap the HCP disciplines*, and RQ2, *the impact of overlap on adherence*. Subthemes are also listed in the graph accordingly.

All qualitative data by patterned statements was matched with a TDF domain using the definitions provided by empirical literature (Lipworth et al., 2013). When possible, member checking validated TDF matching. Ten domains, out of 14 total, were found in this results of this study. Figure 13 illustrates the spread of coded responses by TDF domain, with the top four domains ranked by statement frequencies: (a) *social influence* (26), (b) b*elief of capabilities* (26), (c) *social/professional role and identity* (21), and (d) and *beliefs of consequences*. *Environment*

was the lowest with only one coded response. Domains were ranked by the number of coded

statements to capture multiple coded statements made by individual participants.

In all, the study was rooted in theory, literature, and personal principle researcher

experience. Research reviewed in Chapter 2 provides a solid foundation of evidence

demonstrating a significant problem of EBP adherence deficiencies that lead to decreased patient

outcomes. A gap in the literature was noted in studies utilizing the TDF, which has been

successfully used in other patient populations to address necessary behavior change. Like to the

literature, the principal researcher conducted a qualitative case study, detailed in Chapter 3, using

convenience sampling to address three posed RQs to understand overlap specific to the three

primary HCPs. The analyzed data presented in Chapter 4 provided insight into three central

themes related to overlap, then mapped to 10 of the 14 TDF domains. The principle researcher

interpreted findings, and presented results related to the literature follow.

Discussion of the Results

Overview of results. The RQs were used to organize the data as previously discussed

and detailed in Chapter 4. Ultimately, to address the overall research objectives and purpose, the

data analysis and organization were incorporated into an updated conceptual framework graphic

that will be introduced in this section. The following discussion reviews the results relative to

this organization and these visual representations.

Discussion of interpretation by RQ visual representation and TDF domains. An

Ishikawa diagram, illustrating cause and effect, was used to visually represent the study results

showing this transition from patient state to patient outcomes. The arrow of the graphic (see

Figure 14) symbolizes this patient transition. This graphic symbolizes the RQs addressing how

overlapping actions (RQ1a), overlapping expectations (RQ1b), and perceived impact of overlap

(RQ2) influence integrate to impact patient outcomes. The branches of the diagram represent the

different TDF domains matched from the qualitative data, thus, organizing the data by TDF

domain (RQ3). Sub-branches constitute individual patterned statements from the participants

contributing to the TDF domains' influence on adherence. This discussion is specific to the

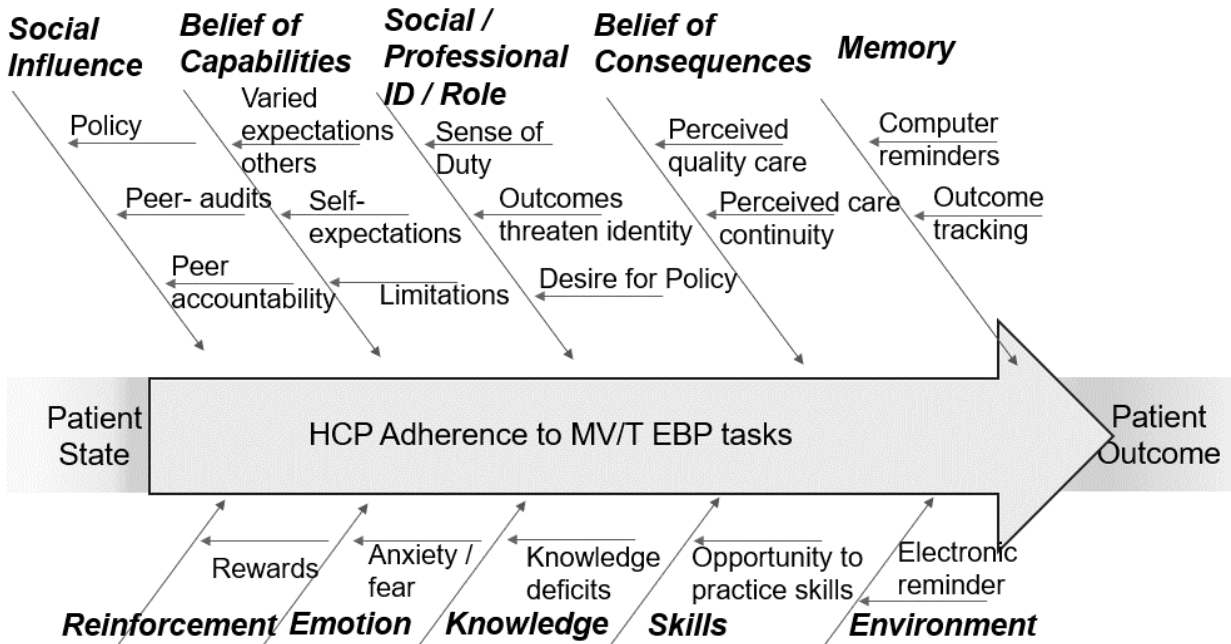participant responses and the correlating domains, along with any overlap within TDF domains.

Figure 14. Graphical representation of results arranged by TDF.

The branches of Figure 14 represent the TDFs and are arranged by the frequency of

patterned statements. The highest frequency domains are on the top five branches. Branches

under the arrow are the lowest frequency domains. Figure 13 displays the rate of each TDF

domain by participant statements. Participants did not rank the importance of their statements;

thus, the ranking was based on the frequency of patterned statement occurrences. The principle

researcher determined the level of impact on the frequency of categorized patterned statements.

Social influence was identified 26 times by participants. *Social influence* is defined as

"interpersonal processes" (Lipworth et al., 2013, p. 7) impacting one's thoughts or behaviors.

Policy, peer-/self-audits and *holding each other accountable* were categorized into this domain. All patterned statement responses, as coded by the principle researcher from the raw data, indicated perceived expectations from others, such as leadership or peers, impacted the participants' behavior on shared EBP tasks. Closely linked to the patterned statements in this domain are those included in *emotion* based on similarities of participant statements. Like *social influence*, participants expressed a motivation to comply with adherence based on the assumption or perception that others may expect the behavior. However, these statements indicated a negative *emotion*, such as fear, embarrassment, or anxiety. Thus, these responses were categorized to *emotion* though a direct result of the pressure felt by *social influence*. Together, the statements of these domains demonstrate a strong impact of perceived social factors on participants' decision to adhere to EBP tasks.

   Social/professional role and identity domain was also highly ranked based on the frequency of statements with 21 coded responses. Responses matched to this domain demonstrated adherence motivation from behaving as expected from his/her professional discipline (Lipworth et al., 2013). These statements included a sense of duty to protect the patient. Also, participants reported adhering to EBP with the intent to avoid adverse patient outcomes. Staff stated patient-specific emails linking staff with negative outcomes is "embarrassing" (RN5); therefore, adherence is motivated by a sense of duty and in an attempt to preserve one's identity as a "good" HCP. Furthermore, some participants expressed the desire for a clear policy. Such responses included a desire to do what leadership expects from their respective discipline, correlating adherence to policy with being an HCP. These respondents felt if a policy existed, they would be able to uphold those expectations appropriately, therefore, upholding the expected behaviors of their profession. The number of coded responses

demonstrates the potential impact of factors relating to *social/Professional role and identity* may have in adherence.

The *belief of capabilities* included 26 patterned statements. Statements associated with this domain included confidence, or lack thereof, in self- or other's abilities (Lipworth et al., 2013). Most participant statements were specific to the varying expectations of others. These participants stated they chose to complete a task based on their perception of a colleague's ability to perform the task. For example, if the participant did not trust the colleague who shared the EBP action, or if the participant knew the colleague was not comfortable with completing the shared task, he or she would modify his or her behavior to ensure the job was implemented. However, in this study, participants expressed a continued commitment to EBP adherence, even if confidence was lacking. Rather than avoiding the task, participants expressed supplemental actions. These included knowing his or her limitations and communicating to colleagues for support during task completion. Self-confidence was also a strong motivator. Five participants noted a higher expectation of self to complete the tasks based on their competency level in comparison to other colleagues. Based on the number of statements, *belief in capabilities* was a strong influencer in adherence to EBP tasks.

Belief of consequences included 20 patterned statements. This domain impacts behavior by the assumption that one's action will result in a particular outcome (Lipworth et al., 2013). Participants were motivated to adhere to shared EBP because they believed the task sharing increased continuity of care and increased the quality of patient care. The participants expressed a desire to implement and share EBP tasks to contribute to positive patient outcomes. The desire to participant in positive results aligns closely with patterned statements identified in *social/professional role and identity*.

The remaining domains of *memory, reinforcement, skills, knowledge*, and *environment* were also identified but occasionally compared to other mapped domains. All three domains included a total of 18 responses. These statements noted the importance of reminding staff of the tasks, rewards for adherence, and the need for knowledge and skills to complete the tasks. An environment conducive to the tasks was also noted as an influencer to EBP adherence.

Discussion of interpretation by research objective and revised CF. The primary objective of this research was to explore the overlap of primary MV/T HCPs' tasks and expectations to understand its impact on EBP adherence, using the TDF social domains to inform the study. The study achieved this goal by addressing each RQ as discussed and demonstrated in Figure 14. Based on the results organized by the RQs, the principle researcher incorporated the analyzed results into a revised conceptual framework to visualize how the findings of the study fit within the structure. The conceptual framework was altered from its original version (see Figure 1), showing all 14 TDF domains equally surrounding the barriers and facilitators of HCP EBP. In its revised version, the outer ring of the 14 TDF domains was replaced. Now, the outer ring is a circular graph showing the representation of 10 identified domains proportionally represented by the frequency of participant statements. The social domains are highlighted in blue and set out to emphasize the original study objective to determine social factor influence. Other domains, particularly the two belief domains, also represent a significant portion of the circle graph, indicating the importance of these domains as well. Figure 15 shows the updated conceptual framework with the results. Figure 16 provides a comparison of the original conceptual framework for comparison. This discussion reviews the interpretation of the results and how these results fit into the broader conceptual framework to impact adherence.
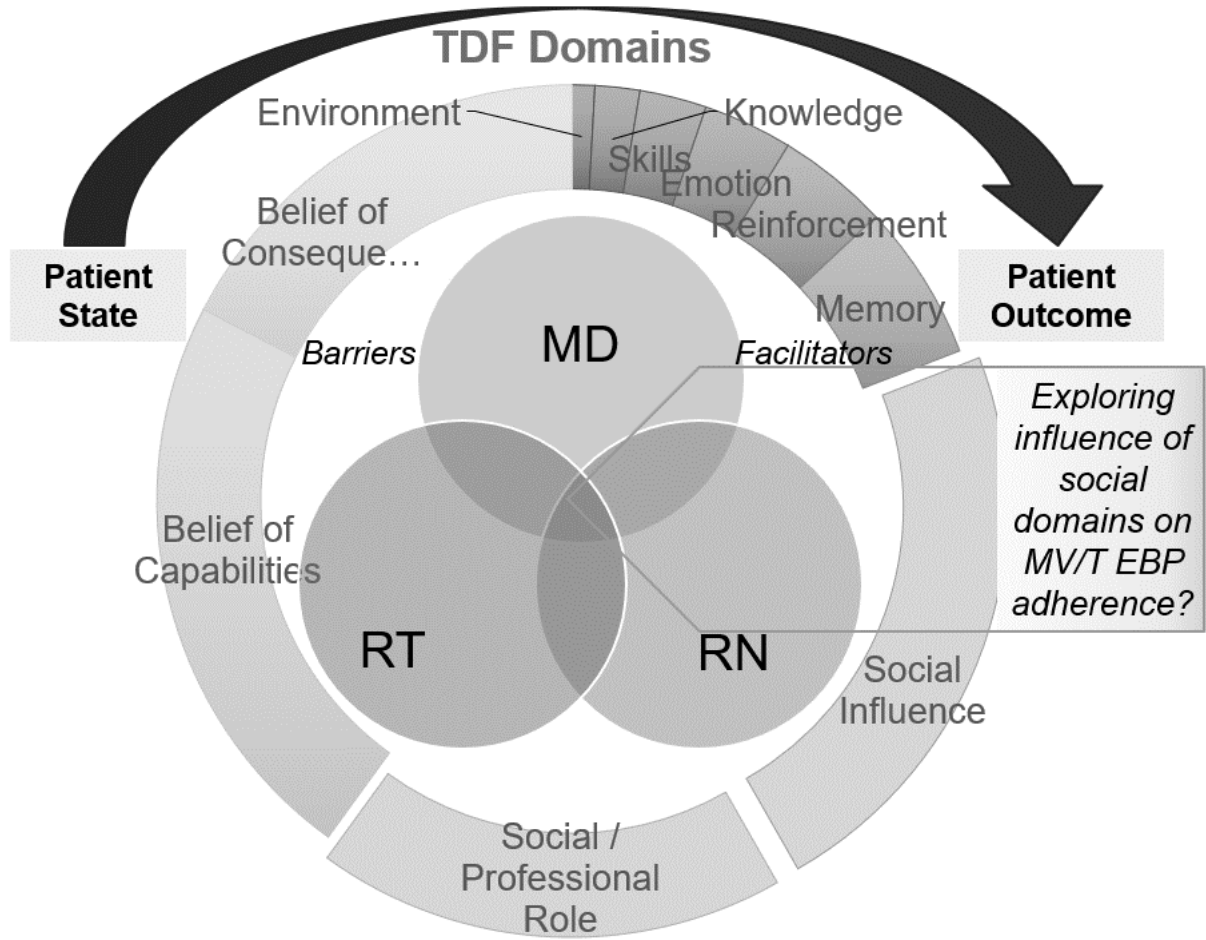
Figure 15. Revised conceptual framework updated with study results using adapted TDF from Cane et al. (2012).
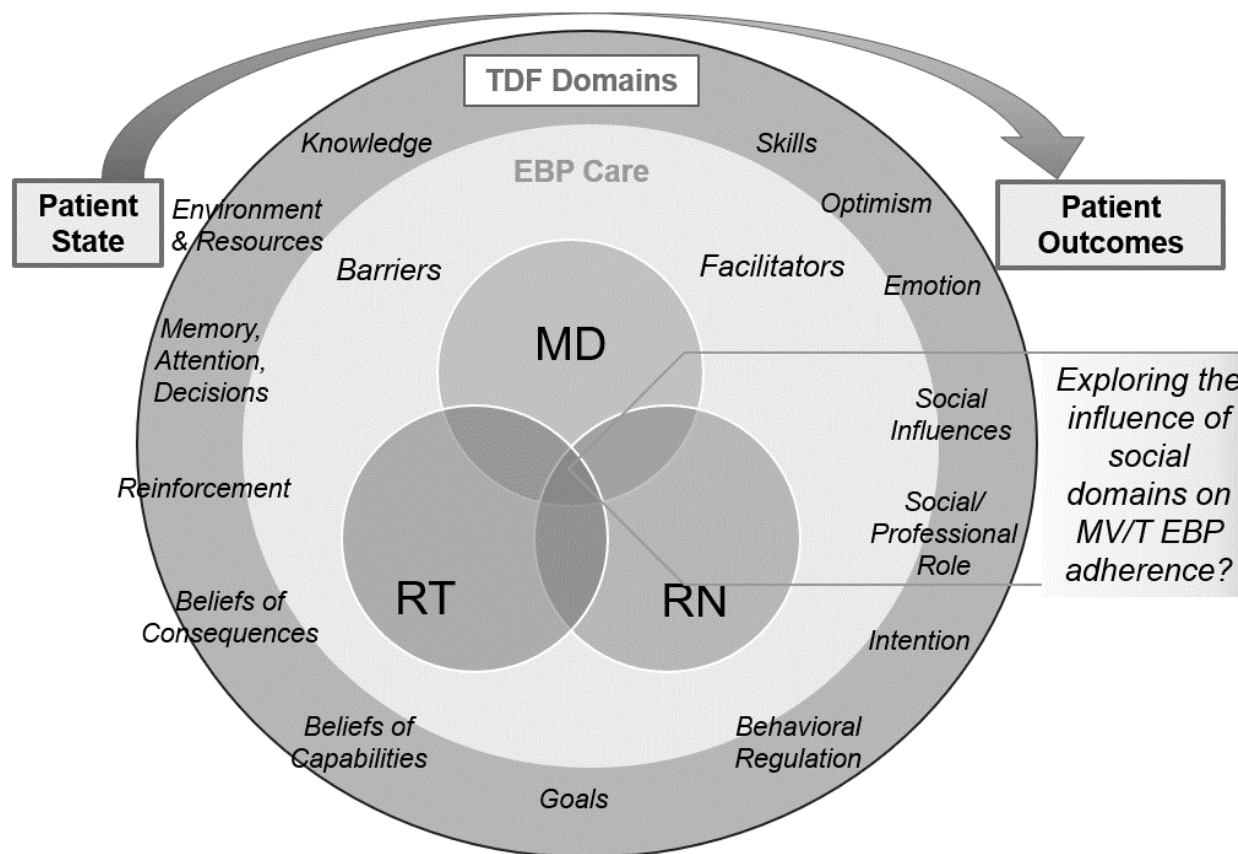
Figure 16. Original conceptual framework for comparison to conceptual framework with results.

Quantitative data was collected by a list-attribute question asking participants to identify shared EBP tasks amongst the three primary HCP groups. Of the tasks, *cuff pressure management* was noted to be this most frequently identified task listed 11 times of 17 responses based on several participants listing more than one shared task. As a result of this commonality, many participant responses were specific *cuff pressure management*. Other tasks overlapping scopes of practice, such as *suctioning* and *oral care*, seemed much more definitively assigned to one discipline or another. Regarding cuff pressure or other shared tasks, participants were unable to identify if a policy dictated this assignment or if it was "just something we put upon ourselves" (RN5). Interestingly, all participants expressed unclarity or the assumption of policies regarding any EBP task though cuff pressure management emerged as the primary identified,

shared task. The top four domains are addressed first, along with any overlapping domains, then lower ranked areas.

During the interviews, participants emphasized, and as shown by the number of responses, the importance of upholding expectations. These expectations were most often perceived by peers, leadership, or the represented profession. Participants generally held themselves to a higher standard than they held others. In fact, many participants reported adhering to shared tasks more so when they felt other co-owners were less capable. Participants were intrinsically motivated by the belief that he or she had a professional duty to protect the patient (*social/professional role and identity*). Or, they were extrinsically motivated by peer-audits (*social influence*) or the fear of embarrassment from peers (*emotion*). This sense of duty and a potential threat to identity/social standing were strongly noted across all participants as a factor on EBP adherence. These social and self-expectations strongly influence adherence and should be prioritized in consideration for adherence strategies.

As noted, all participants were unclear, including the nurse manager, on the existence of policies clearly outlining the ownership of shared tasks; thus, leadership expectation was not clear. However, some participants expressed the desire for a policy so they could "do what was expected of them" (RN2). Despite a lack of clear expectations, participants executed shared tasks based on the set culture of the unit and to ensure quality patient care. These findings further confirm the desire to uphold the expectations of leadership but are superseded by the sense of duty to the patient, both being attributed to the *social/professional role and identity* domain. Again, this data demonstrates a desire to meet expectations from various sources, including peers and leadership.

Closely linked to this sense of duty, was the perceived sense that overlapped EBP tasks and expectations were positive. Participants believed sharing the responsibilities between HCPs provided better quality care through increased care continuity; thus, they were motivated by this sense of belief (*beliefs of capabilities, beliefs of consequences*). All participants expressed the positive impact of shared tasks and expectations. Participants reported skill deficits of peers, stating these known deficits motivated adherence from the participant to ensure care was delivered. Conversely, some expressed doubts regarding their skills. However, participants emphasized the sense of duty motivated adherence with a rapid follow up to another colleague to ensure satisfactory task completion. In all, participants expressed a dedication to adherence despite confidence or lack thereof to maintain quality patient care. They believe shared EBP tasks improve patient outcomes; therefore, they were motivated to adhere.

Memory, reinforcement, and *environment* were mentioned collectively 13 times in the data. Most participants noted the positive impact of computer reminders on EBP adherence. Four participants stressed the importance of patient-specific emails regarding adverse patient outcomes. Linked with the *social/professional role and identity*, *social influence,* and *emotions*, participants reported adhering to tasks to avoid being listed as a staff member caring for patients who contract VAP. Two participants mentioned the VAP tracker as a positive influence on EBP adherence; however, interviewees expressed uncertainty of tracker accuracy. One person stated awards for patient outcome streaks without cases of VAP were helpful. However, other participants were aware of the awards but did not know the awards were related to patient outcomes, diminishing the value of reinforcement for adherence behavior. Though participants expressed potentially positive impacts on adherence in these domains, in several cases, unclarity seemed to minimize the effect.

Six participants made statements associated with *knowledge, skills*, and/or *environment*. Two participants expressed a desire to adhere to shared tasks to assist non-dominant HCP colleagues in improving skill and confidence. Sharing the tasks was perceived as facilitating learning for colleagues. Conversely, two other participants felt opposed to adhering to shared tasks due to a perceived lack of knowledge regarding the skills. Linked to *Memory*, only one participant indicated the environment as a barrier to adhering to EBP. This participant specifically noted extra time computer reminders caused during charting; therefore, this participant would attempt not to enter patient data that may "flag" the computer to initiate the reminders (MD1). This contrasts with five participants who found the computer reminders to be helpful in adherence. These statements of *knowledge, skills*, and/or *environment* are less frequently stated and include varying or contrasting perspectives. Based on this variation, it is unclear if these domains are facilitators or barriers; however, it is clear each have an impact.

Meaning of the data and possible influences. The strongest influencing TDF domains, as evidenced by statement frequency, were the social and belief domains. Additional links with other domains like *emotion* and *reinforcement* closely link to the social and belief domains, further strengthening the importance of these social and belief domains. Based on analysis, the principle researcher presents data meaning and addresses possible influences on the data.

Social domains of *social influence* and *social/professional role and identity* were the most influential domains influencing adherence to overlapped EBP tasks. Patterned statements related to upholding expectations from various sources included expectations of self and from peers and leadership. Participants had a strong desire to perceive themselves and to be perceived by others as proficient HCPs. This proficiency or positive perception as closely associated with adhering to EBP tasks. Some participants expressed an intrinsic motivation or sense of duty to

185

the patient, while others expressed an extrinsic motivation to adherence to avoid negative peer or

leadership perception.

Additionally, participants expressed a desire to follow leadership expectations; however,

almost all participants, including the nurse manager, were unclear if policies regarding

overlapped tasks exist. Yet, a sense of duty and a culture of expectation amongst the staff

motivated adherence despite unclarity. This suggests that expectations from leadership are

impactful but may not be as strong as perceived peer expectations or the sense of duty to the

patients from professional identity.

An item on the questionnaire specifically asked participants about policy, hence,

encouraging responses regarding policy. Twenty-four responses were coded into one of three

categories regarding policy, all of which were included in the social domains. This specific

question addressing policy impacted the number of responses in these domains. However, a total

of 47 responses were included in these domains. Removing all 24 policy responses maintains the

social domains in the top four coded TDF domains. Conversely, no direct questionnaire items

addressed self-perception or expectations though the highest coded response (12 statements),

besides policy, was the expressed sense of duty to the patient, relating to *social/professional role

and identity*. The high frequency of this unsolicited response emphasizes the impact of this

domain on EBP adherence.

These results indicate a strong awareness of self-expectations and expectations of others.

HCPs interviewed engage in behaviors they feel are aligned with how they identify as being a

part of their profession and want to uphold an image perceived as acceptable from leadership and

peers. More than other factors, HCPs desire to act in a manner they feel is beneficial for the

patient. They closely related their profession to a duty to protect and advocate for the patient. Staff feel adhering to overlapped tasks is acting in line with their role as an HCP.

Responses matched to the belief domains were closely related to a sense of duty to the patients. Participants reported adhering to shared EBP tasks based on a belief that these tasks had a positive impact on patients. Sharing EBP tasks, participants felt, facilitated swift care without waiting for co-task owners, like RT or MD, who may be off the unit or with another patient. Despite a lack of confidence in some interviewees, this desire to provide care continuity without delay motivated the participants to adhere rather than waiting for the primary task owner. Participants expressed supplemental behaviors to address a lack of confidence such as rapid communication with the task co-owner and a keen consciousness of personal limitations to ensure patient safety. Again, emphasizing the participants' awareness of their primary duty to deliver safe and quality care.

Like policy, the interview questionnaire included an item that directly asked participants how they felt about the impact of overlap. Though this was important to evaluate RQ2, the question may have increased the participants' responses regarding this topic. Hence, this question may have skewed the frequency of responses. All 20 answers to this direct question were categorized to *belief of consequences*. However, based on the number of participant responses related to a duty to care or protect patients, it is assumed this domain remains a substantial factor in the decision to adherence to EBP tasks.

Though not as highly recorded, statements related *reinforcement* and *memory* were noted as factors impacting EBP. Some participants expressed motivation to adhere based on positive reinforcement such as accolades from leadership or small awards such as specialty coffee. Others reported motivation from trackers showing the number of days since a case of VAP diagnosis.

Trackers provided a reminder and reinforcement. Though favorable to a few participants, several others express confusion regarding the rationale of rewards and/or doubted the validity of the tracker. Rewards for behavior cannot be attributed to reinforcement if the action being rewarded is unknown. Similarly, doubt regarding the accuracy of the tracker contradicts its impact on staff. One participant even expressed doubt on the methods in which VAP is reported, saying diagnosis was not based on physician assessment but rather a retrospective chart review by an infection control committee. Other memory aids, such as computer pop-ups, were also identified as a decisive factor to adherence though one participant reported computer reminders as a barrier, coded as *environment*. These findings indicate rewards reinforcement may be a facilitator to adherence; however, care must be taken to ensure participants are aware of the rewarding system and methods to track are perceived as valid and convenient to the staff.

Statements *knowledge* and *skill* were expressed the least. Participants reported being motivated to adhere to shared tasks, not based on current knowledge or skills, but to improve knowledge or skills of the non-dominant groups. Interviewees felt that sharing the task with non-dominant groups would facilitate learning opportunities to enhance adherence. One nurse participant, self-identifying as not the primary owner of the task, stated a reluctance to adhere to the task based on lack of knowledge or skill. Despite the low responses, knowledge and skill did impact the participants' adherence behavior. It may be important to acknowledge this knowledge and skill deficits as barriers; however, the sharing of tasks as an opportunity to address deficits.

Results discussion summary. The principle researcher determined the results of this study sufficiently address the RQs, hence, successfully achieve the research objectives and purpose. The results of the study fully answer the questions as well as identify additional points of interest important to the topic of MV/T EBP. Figure 14 represents the findings organized by

TDF as stated in the RQs, while a modified graphic of the CF (see Figure 15) incorporates the results of the study showing which TDF domains, and to what frequency these domains, impact overlapped EBP adherence. This revised CF highlights the social domains to emphasize the original research objective. Other identified domains, particularly the belief domains, are presented to include additional study findings.

Discussion of the Results in Relation to the Literature

The literature reviewed in Chapter 2 demonstrates the need for EBP adherence in the MV/T patient population. Ample research has determined EBP practice positively impacts patient outcomes including morbidity and mortality rates (Guthrie et al., 2018; Jannson et al., 2018; Wolfensberger et al., 2018). Despite the recommendations, the translation of research to patient bedside practice has been noted as low as 0%−3% (Nyeo et al., 2016). General EBP adherence is a challenge across patient populations (Jun et al., 2016); however, the MV/T population may have additional barriers due to HCP overlap, particularly impacting factors from the social domains. Though only one study utilized the TDF to inform results of EBP in the MV/T population, several studies identified barriers or facilitators to MV/T EBP adherence that fall into social domain definitions (Lipworth et al., 2013). These findings include:

- Shared duties, decision making, or role ambiguity between RN, MD, and RT (Abode et al., 2016; Guthrie et al., 2018; Klompas et al., 2013; McConnell et al., 2016; Southcott et al., 2019; Welton et al., 2016);

- Impact of peer or leader support (Klompas et al., 2014; McGrath et al., 2017; Wolfensberger et al., 2018), and;

- Feelings of HCP empowerment (Fisher & Oster, 2017; Khan et al., 2019; Mah et al., 2017).

The results of this study are presented as they relate to this literature, the community of practice, and the community of scholars. To differentiate this published literature from the principle researcher's original study being presented, this conducted study is termed the *new knowledge, new study,* or *presented study.*

Only one study (Goddard et al., 2018) utilized the TDF in a study with an MV/T patient population. Goddard et al. sampled 40 clinicians to identify facilitators and barriers to early mobilization receiving mechanical ventilation. Coding, analyzing, and matching participant responses to TDF domains resulted in all 14 domains represented at varying levels. Goddard et al. asked the participants to rank the level of importance to their results; hence, the graph (see Figure 17) shows assigned values of low, medium, and high importance along with the number of coded responses.
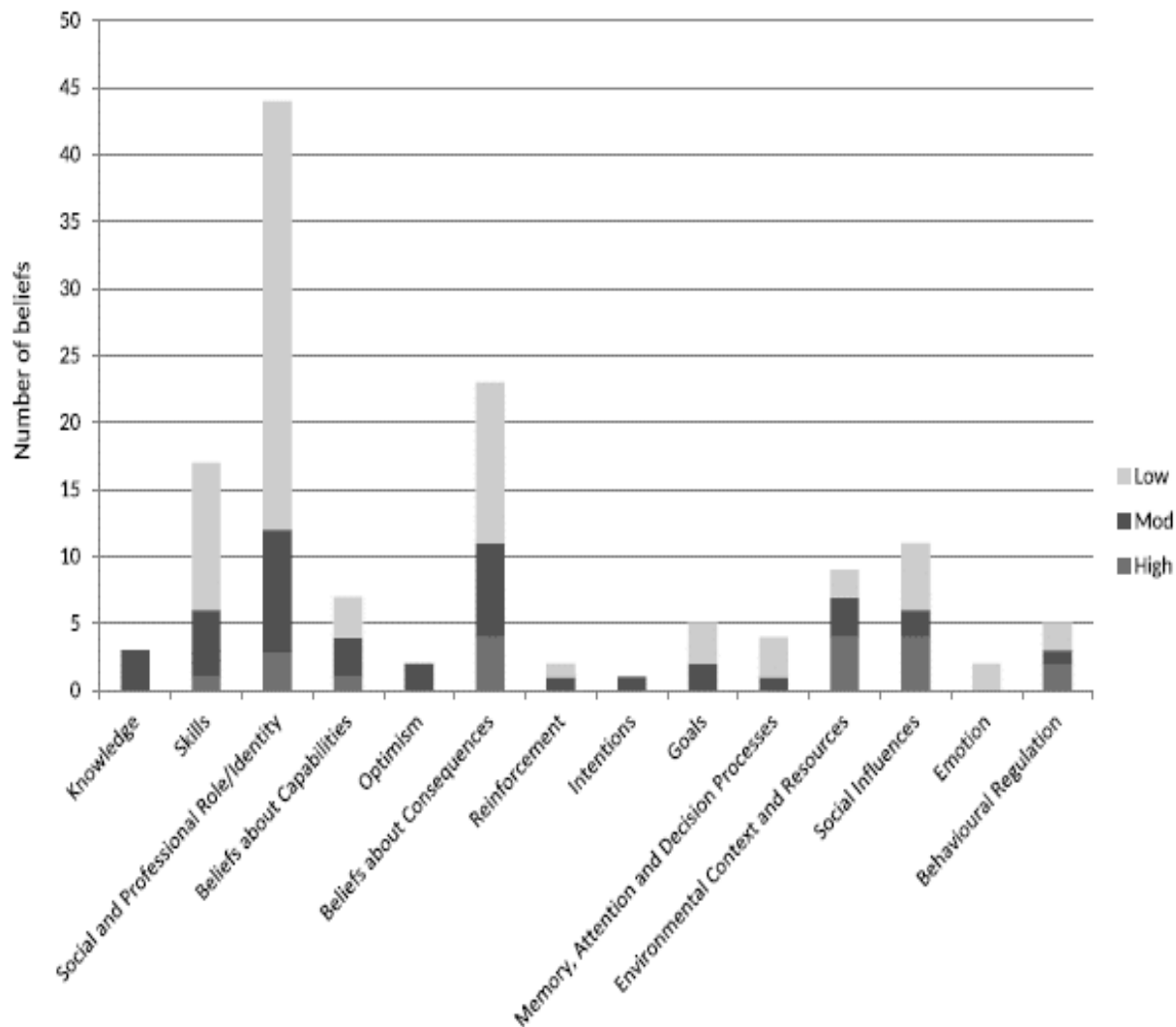
Figure 17. Sample figure of findings from Goddard et al. (2018).

Goddard et al.'s (2018) results were similar to the results of this study, finding social

domains and *beliefs of consequences* in highest frequencies. Goddard et al. (2018) noted

participants' emphasis on physician' leadership role in prescribing early mobility

(*social/professional role and identity*) and local champions, or positive peer encouragement were

motivators in adhering to the desired behaviors (*social influence*). Similarly, the newly gained

knowledge from this study noted a high frequency of responses indicating peer pressure, or

avoiding a negative peer perception, was a motivator to adherence. Like Goddard et al. (2018),

identification of *beliefs of consequences* was noted. Goddard et al. (2018) identified a theme of responses correlating the positive impact of mobility as an adherence motivator. This new study also identified this motivation linking the belief of positive impact with EBP adherence.

A mixed-method study using the Behavior Change Wheel Framework aimed to measure adherence to VAP protocol and conduct focus group interviews regarding adherence factors (Wolfensberger et al., 2018). Most responses were attributed to reflective and automatic motivation in the BCW wheel by researchers. This study defines this category as motivation from results, likened by this principle researcher to the *belief in consequences* TDF domain. Wolfensberger et al. reported participants indicating belief in the effectiveness of VAP prevention measures were motivators in adherence. Doubts of effectiveness or concern the intervention may cause discomfort to the patient were barriers (Wolfensberger et al., 2018). Social factors were noted to impact adherence, but less frequently than other domains. Like Goddard et al. (2018), the participants in the Wolfensberger et al. study identified positive peer influence from local champions as an essential factor. Though differing in frequencies between the Wolfensberger et al. (2018) study and this presented study, social influence was identified as a factor in EBP adherence.

A lack of qualitative data is noted in the MV/T patient population exploring EBP adherence factors. Most studies included in the literature review quantitatively evaluated interventions on patient outcomes or HCP adherence rates. Though the quantitative methodology limits researchers' ability to explore EBP factors in detail, many studies included EBP interventions related to TDF social factors, though not using the TDF (Guthrie et al., 2018; McConnel et al., 2016; McGrath et al., 2017; Welton et al., 2016). Other studies did not include socially aimed interventions but discussed the potential impact of social factors in the results

192

based on related literature (Adobe et al., 2016; Klompas et al., 2014; Southcott et al., 2019). These studies follow relative to the presented study's findings.

The need for multidisciplinary care in the MV/T patient population is widely accepted and promoted by various advanced respiratory guidelines (Klompas et al., 2014; Mitchell et al., 2013. Simultaneously, literature acknowledges potential barriers arising from overlap of expertise or friction between various disciplines (Southcott et al., 2018). Three studies in the literature review included interventions aimed explicitly at clarifying multidisciplinary roles as a larger bundle of interventions to either improve patient outcomes and/or improve EBP adherence (Guthrie et al., 2018; McConnel et al., 2016; Welton et al., 2016). All three studies identified overlap between the included disciplines and included interventions to either clarify roles through policy (Welton et al., 2016), education (Guthrie et al., 2018), or empower non-dominant disciplines to execute decision-making authority based on preprinted orders or identified "leaders" in all disciplines (McConnel et al., 2016; Welton et al., 2016). To a varying degree, each study identified significant improvements to targeted objectives, concluding the bundles were successful. Based on the bundled approach, a true cause and effect relationship cannot be established; however, weak correlations were identified.

An expert team of TDF researchers from Canada, the United Kingdom, and Australia met to provide an implementation guide for studies seeking to utilize the TDF for behavior change strategies (Atkins et al., 2017). Atkins et al. (2017) provided a list of constructs related to each TDF domain. This empirical work references the professional identity, boundaries, leadership expectations, conflicting roles, and social norms as being classified as one or both TDF social domains. Guthrie et al. (2018), McConnel et al. (2016), and Welton et al. (2016) all included interventions aimed to address these factors to improve adherence. Though methods did not

explore staff perceptions, the researchers' inclusion of socially targeted strategies demonstrates some evidence, though weak, that social factors may have an impact on MV/T EBP adherence and/or patient outcomes.

All participants reported uncertainty of leadership expectations for role ownership in shared tasks, particularly in cuff pressure management. Hence, some level of role ambiguity existed. Despite this unclear expectation from leadership, the participants identified a cultural norm "put upon ourselves" (RN3) assigning RT as primary owners of the cuff pressure management and RNs as co-owners. In a most likely subconscious manner, the participants reported a sense of ownership and co-ownership through cultural and societal norms rather than through the formal methods noted in the three studies (Guthrie et al., 2018; McConnel et al., 2016; Welton et al., 2016). This culturally established task-sharing was perceived as efficient by participants. In fact, neither this new study or the three published studies (Guthrie et al., 2018; McConnel et al., 2016; Welton et al., 2016) could measure the degree in which role ambiguity contributed to adherence, but all established an impacting role in which these societal influences have on MV/T adherence.

Furthermore, Welton et al. (2016) and McConnel et al. (2016) targeted empowering staff to improve timely EBP adherence and decision making. Notably, these studies empowered non-dominant disciplines of RNs or RTs to execute interventions culturally perceived as the MD's role though tasks were under all scopes of practices. Again, societal norms or perceived behaviors aligning with one group relate to the *social/professional role and identity* TDF domain (Atkins et al., 2017; Lipworth et al., 2013). Such perceptions of authority can create friction between groups if inequality is assumed, particularly in decision making and EBP adherence (Southcott et al., 2019). Welton et al. updated policies regarding roles and responsibilities of

selected EBP tasks, and McConnel et al. initiated preprinted orders clearly outlining the responsibilities of non-dominant disciplines. As previously stated, these interventions were a bundled set; therefore, a true cause-effect relationship was not established (McConnel et al., 2016; Welton et al., 2016).

As termed by McConnel et al. (2016) and Welton et al., (2016), *empowering* non-dominant disciplines may contribute to increased adherence. *Empowerment* was correlated with *social influences* by the principle researcher of this study using Atkins et al. (2017) constructs of social norms, power, conformity, and inter-group conflict. This new data did not show, inter-group, or inter-discipline, conflict; however, the perceived expectations from others were frequently coded. Though the sources of perceived pressure vary from unbalanced power (McConnel et al., 2016; Welton et al., 2016) to peers in the presented study, the published studies align with such societal pressures exist and impact EBP behaviors.

McGrath et al. (2017) also used a quantitative quality improvement study to evaluate the impact of education, patient-centered, and organizational interventions on adhered care to improve patient outcomes. Of various interventions, researchers report using feedback, examples of other facility success stories, and local patient outcomes stories to emphasize the potential impact of the desired behavior on patients. Though McGrath et al. (2017) did not utilize the TDF, these interventions align with *beliefs of consequences* using empirical TDF articles (Atkins et al., 2017; Lipworth et al., 2013). McGrath et al. concluded these interventions were successful based on patient outcome improvements, but the bundled approach limits the ability to identify the exact impact of these specific interventions.

The new data identified a high frequency of coded statements related to *belief of consequences*. Participants remarked they believed sharing these tasks increased adherence and

195

were necessary because EBP was beneficial for patients. McGrath et al. (2017) used patient outcome stories from both internal and external to the facility. External examples included case studies from other facilities implementing similar interventions. Feedback regarding implemented interventions was shared with the staff to encourage and motivate staff on the positive impact the new actions. It is unclear if these stories were success stories or stories of adverse outcomes due to EBP adherence deficits. However, in the McGrath et al. study, it is stated that these stories promoted similar adherence behaviors. The principle researcher of the newly collected data also noted patient-specific stories distributed to the unit staff by email was a motivator for task adherence. These emails, though, were of adverse patient outcomes during non-adherence. Participants noted adhering to tasks to avoid being individually named as a caregiver in these patient emails to avoid negative peer perceptions. Based on these accounts, the principle researcher coded these patient emails as *social influence* rather than *belief of consequences*. However, the notion that patient outcome, and the staffs' perception of adherence outcomes, is an essential factor in changing EBP adherence behavior.

Other studies in the literature review discussed the potential impact of social factors in adherence; however, these discussions were not a direct result of the study interventions (Adobe et al., 2016; Southcott et al., 2019). Both quantitative studies evaluated the impact of adherence on patient outcomes. In the discussion of the studies, the researchers addressed the potential confounding factors of role clarity based on the study literature reviews (Adobe et al., 2016; Southcott et al., 2019). The researcher claims in these studies regarding social factors are speculation based on the methodology; however, the reference to social factors implies a sense of inquiry, hence, the importance of the presented study's research objective.

Despite minimal research, the results of the presented study align with available literature. Goddard et al. (2018) closely aligned with these results in both qualitative methods and supporting TDF framework. Goddard et al. concluded TDF social domains were of high importance in MV/T adherence. Other quantitative studies were limited in exploring factors of adherence based on methodology; however, three (Guthrie et al., 2018; McConnel et al., 2018; Welton et al., 2016) included interventions related to the social TDF domains of Social Influence and Social and Professional Role and Identity as defined by Atkins et al. (2017). Interventions were part of a larger bundle of implemented actions, but each researcher group identified significant improvements. Using the TDF empirical literature (Atkins et al., 2017; Lipworth et al., 2013), the principle researcher was able to align these studies with findings of the presented research in this Chapter. Other studies (Abode et al., 2016; Southcott et al., 2019) also mention potential social factor confounders but did not include methods to evaluate objectively. In all, literature using the TDF (Goddard et al., 2018) and studies using social domain-focused interventions complement the new research, which highlights the impact of social factors on MV/T EBP adherence.

Limitations

Limitations of this conducted study include the general qualitative methodology. The case study does not facilitate a cause and effect relationship (Yin, 2014) but does allow the in-depth exploration of participant perceptions (Creswell, 2011). Though limited in the ability to generalize to other facilities, the methodology facilitated the achievement of the research objective by addressing each RQ.

The convenience sampling included 14 staff members. Though small, this sample included both day and night shift staff to promote diversity amongst the participants. The sample

size included 88% of the available staff. The participants' discipline groups represented the staffing matrix distribution with four RNs, one RT, one MD on each shift. The study also included one UAP and one nurse manager. The data was collected over two consecutive, 12-hour shifts. It is possible that continuing to collect data over several days may have yielded different responses; however, the sample was well-saturated with little variance in response from the day to night shift participants, indicating validity (Cutliffe & McKenna, 1999).

Potential researcher bias existed based on personal and professional experiences and relationships at the facility described in Chapter 3. Recruitment was performed as planned, keeping the anonymity of the principle researcher confidential until participants agreed to volunteer for the study. Of the 14 participants, only one had a previous, professional relationship with the principle researcher. Hence, the impact of these biases is minimal. Triangulation was performed using available sources. The nurse manager provided similar responses as the staff, validating responses. Photos were taken of the VAP tracker, though data on the board was said to not be current by several of the participants. Researcher bias could not be eliminated but executed methods to increased validity in data collection (Creswell, 2011; Yin, 2014).

Data analysis included bracketing to address preconceptions that may have influenced interpretations (Saldaña, 2015). NVivo software further validated manual analysis. Only four participants volunteered for member-checking, which was performed via telephone. Only minimal updates were made to the data. One limitation of this study includes the TDF domain coding. Goddard et al. (2018) included a two-person, blinded review of data matching to domains to increase reliability. Member-checking was utilized by reading the participant statement to the chosen TDF definition. Empirical references, including articles with TDF definitions and example constructs were used to match (Atkins et al., 2017; Lipworth et al.,

2013). Though member-checking increased validation, this is a limitation of the presented study. Additionally, during data collection, participants were not asked to rank or assign value to the adherence factors like in the Goddard et al. (2018) study. The lack of ranking limited the ability to understand the varying importance of the responses; however, the principle researcher ranked data by frequency similar to other studies such as Craig et al. (2018).

The study is limited to only the participants' perceptions of actions, expectations on adherence. The study did not collect data on actual adherence rates, nor was patient data collected to determine trended rates of preventable outcomes. This limits the ability to assess perception on actual impact, but still facilitates valuable knowledge regarding motivation.

This qualitative study is limited, as described yet valuable. The case study cannot be generalized; however, the small, representative population provided saturated data. The data was collected and analyzed using traditional validation practices to minimize researcher bias, such as member-checking, bracketing, and computer software validation. Though a secondary source to validate TDF domain matching, member-checking was performed as available. Results were compared to literature with similar findings. The principle researcher presents the results of this study confidently based on the methods, validation, and comparison with literature as described.

Implication of Results for Practice, Policy, and Theory

In the review of the research objective and based on the literature as discussed, this study sought to explore the overlap between primary MV/T HCPs to understand its impact on adherence, using the TDF social domains. Executing this case study addressed all three RQs and found social TDF domains frequently identified as impacting EBP adherence. The purpose of the study was to add information to the paucity of data in this patient population, specific to the social domains, to inform transformational education and leadership strategies needed to support

HCP EBP implementation and adherence. This study confirms *social*, as well as *belief* domains, are important factors in modifying behaviors impacting adherence. This discussion details this assertion and explores the implications and significance of this new knowledge in the field of study and practice. Generalizability and gaps are also discussed.

     Implications. The most frequently noted domains were: (a) *social influence,* (b) *belief of capabilities,* (c*) social/professional role and identity,* and (d) *belief of consequences*, making up 81% of all coded responses. The collective implications of these findings emphasize the importance of addressing such factors in developing strategies aimed to facilitate HCP behavior change in alignment with EBP adherence. Each domain has uniquely different, yet overlapping, applications to the field of practice.

     Social influence included coded responses associated with behavior based on the interpersonal processes of others (Lipworth et al., 2013). In this study, this included perceived peer and leadership expectations. Most responses were attributed to unclear policies regarding ownership of overlapped tasks. Participants expressed confusion if a policy existed, or an assumption that there was a policy but was unknown. Despite the uncertainty of leadership's expectations, all participants reported engaging in the shared tasks. Some participants stated the shared task was a duty the participants took on themselves, an assertion that the cultural expectations of the unit staff, or the peer influences and expectations, superseded the potential conflict with leadership expectations. Perceived peer expectations continued to rank high in the *social influence* domain with many participants reporting adhering to tasks to facilitate a satisfactory review in peer-audits.

     Some overlap existed between the *social influence* and the *social/professional roles and identity*, including the desire to align with perceived expectations. Participants reported adhering

200

to tasks to avoid patient-specific emails sent to the unit when patients experience adverse outcomes. These responses aligned more closely with *social/professional roles and identity* as participants stated it made nurses look "bad" based on the image of HCPs being patient protectors or advocates. However, the unit-wide emails incited a fear of embarrassment, hence, aligning also with *social influences*.

The number of responses strongly indicates the importance of perceived peer expectation in adherence. Participants expressed a keen awareness and concern for how they are recognized by peers. These perceived expectations included adhering to tasks to comply with cultural unit norms, being a collaborative team player by sharing the tasks, and overlapping with *social/professional roles and identity*, being a "good" HCP. The impact of these perceived peer expectations motivated participants to adhere to EBP tasks.

Participants adhered to shared EBP despite an understanding of leadership's expectations regarding EBP. Implications to practice include strategizing peer-influenced interventions to capitalize on the power of peer-pressure. Many published studies (Goddard et al., 2018; Khan et al., 2019; Klompas et al., 2014; McGrath et al., 2017), including the discussion of MV/T studies, also identified the importance of positive peer influence. Strategies can include utilizing local champions. This recognizes key staff that *champion* or advocate for the desired EBP behavior. Champions motivate peers through informal education and encouragement to inspire colleagues to join in the behavior.

Other frequently identified responses included confusion regarding EBP policy; therefore, the participants were unclear on the expectations of leadership. EBP tasks were completed based on expectations from peers. This implies that cultural norms and peer influence may be more important than leadership expectations. However, some participants expressed the

desire to align with policies. These participants aligned policy compliance with the HCP role. Though cultural and peer influence seemed to primarily impact adherence, these findings may indicate the importance of EBP policies if well-socialized. It would be practical to address confusion by identifying relevant policies regarding ownership of shared tasks and educate staff accordingly. Because the interview tool asked about policy, it is unknown how many participants may have independently expressed policy as an impacting factor on adherence. Clarification and education of a policy regarding shared task ownership and adherence would not incur high costs or resources to implement, therefore, may be a prudent intervention for increasing adherence.

Both extrinsic and intrinsic pressures were noted in the *social/professional role and identity* domain. Again, participants cited feeling pressure from peers to uphold the behaviors and actions aligning with being a "good nurse." Such practices associated with being a "patient advocate" or "protecting the patient" by adhering to shared EBP tasks. Peer and leadership influences on adherence included the patient-specific emails, identifying staff who were involved in the care of patients with adverse outcomes. Intrinsic motivators, at one of the highest frequencies than any other response, included a feeling of duty to the patients based on his/her role as an HCP.

The motivation to maintain behaviors aligned with an HCP was a strong driver for adherence behaviors. Implications for practice may include strategies aimed towards linking EBP adherence with professional expectations. Again, the local champion may embody this strategy, mainly if leaders selectively chose staff with seniority, or staff member regarded highly by peers. Another potential plan for practice may include creative reminders, educational materials, or reinforcement associating with adherence with language or images connecting adherence with the professional image. For example, in 2002, the Johnson & Johnson Campaign for Nursing's

Future launched a very successful project aimed to increase nurse recruitment, resulting in an estimated 62% increase in young nurses enrolling in nursing degrees from 2002 to 2009 (Green, 2012). This campaign was based primarily on "rebranding of nursing" by raising awareness of the iconic image of the nurse as the trusted, traditional caregiver as well as a "transformative" healthcare figure (Campaign for Action, 2015, paras. 3, 5). Similar strategic materials could be created and distributed to promote the classical, trusted image of the nurse, respiratory therapists, and/or physician incorporating EBP care into the quality care delivered daily. Hence, these materials would further associate the image of HCPs with adhering to EBP, acting on motivations from the *social/professional role and identity* domain.

　　Beliefs of capabilities and *beliefs of consequences* also ranked in the top four most recorded statements. The frequency of these domains implies EBP adherence is motivated by expected patient outcomes and confidence, or lack thereof, in the tasks. All participants expressed adherence to shared tasks based on the believed impact that tasks such as cuff pressure management were beneficial to the patient. Some reported adhering in shared tasks to expand the skills of other HCPs. This motivation based on the belief of positive consequences could be harnessed to increase adherence further. Overlapping with responses related to *memory* and *social/professional role and identity*, the tracking board promoted adherence to shared tasks by reminding staff of the on-going streak of days without VAP. This tracking method also verifies the *belief of consequences* that adherence leads to positive outcomes. Thus, to support this domain as well as *memory* and *social/professional role and identity*, similar methods of sharing positive patient stories as a result of adhered EBP may be beneficial. Other studies also mention using this strategy (McGrath et al., 2016; Welton et al., 2016); however, did not measure impact. Finally, it would be important to maintain the accuracy and validity of the methods of sharing

data. As in the study, the VAP tracker validity was called into question by several participants, most likely decreasing the effectiveness of the strategy.

Belief of capabilities, like *social/professional roles and identity*, included a mixture of both intrinsic and extrinsic motivators. First, participants reported adhering to tasks based on self-expectations. Five participants reported expecting more from themselves in terms of adherence than others. These participants noted the variability in capabilities and competence across various staff members. Based on their self-expectations and beliefs in their capabilities, participants were motivated to adhere to compensate co-owner deficiencies. This finding is unique to this study and not identified in any literature or other published studies. Implications to practice may include strategies similar to *social/professional roles and identity* by creatively strategizing the staffs' beliefs of capabilities. Like *beliefs of consequences,* communicating and socializing positive patient outcomes, or trends in adherence may motivate staff to continue adherence.

Other responses categorized as impacting *beliefs of consequences* was the actions reported when co-owners of shared tasks felt inferior to other staff owners. For example, some nurses noted cuff pressure management being "owned" by RT; however, they felt compelled to adhere to limit adverse events to the patient. Knowing limitations and the importance of rapid communication was identified as critical when adhering to tasks when self-competence is a concern. Education, policy, and local champions could continue to suggest communication as an adjunctive intervention when adhering to tasks if self-confidence is lacking.

Unlike other implementation research studies, *knowledge, skills,* and *environment* were less frequently noted in the responses. This may be attributed to the types of questions in the interview tool geared towards exploring overlapping actions and expectations. Though not a

primary finding in this study, it is important to note these domains have some representation by the participants. The implications of these findings would align with general implementation literature suggesting the importance of education and skill, while ensuring an environment conducive to the desired behavior. This may include education and skills competencies related to cuff pressure management, as well as providing additional equipment for both RNs and RTs to measure cuff pressure.

  Significance to field and literature gaps. The importance of this new knowledge is vital in promoting healthcare and healthcare economics. Ample literature exists to support the importance of EBP adherence MV/T patient outcomes, and conversely, the lack of adherence on the negative health and economic outcomes (Fischer, 2016; Guthrie et al., 2018; Jannson et al., 2018; Timsit et al, 2019; Wolfensberger et al., 2018). HCPs, as identified in this study, are driven to provide quality care. However, HCPs have struggled in changing behaviors to comply with EBP (Jun et al., 2016; Nyeo et al., 2016). Utilizing strategies aimed at specific motivators to adherence may assist in the transformational process required to implement and adhere to EBP.

  Much literature exists to determine the role and impact of knowledge on adherence. However, gaps in EBP adherence remain, particularly in the MV/T patient population. This study used the TDF to understand how social factors impact adherence specifically in overlapped or shared EBP tasks. The results of this study confirm TDF social domains are highly impactful to EBP adherence. Though this study is limited to one small case study, to date, this is the first study to confirm the high impact of TDF social domains specific to overlapping roles and expectations of MV/T HCPs.

  A confirmation of the TDF social domain importance to MV/T EBP presents a new opportunity to further explore social domain impact begin strategizing adherence interventions

based on social factors. This study also demonstrated the importance of the belief domains. Though this domain was not researched explicitly in the literature review, the lack of general TDF studies in the MV/T population suggests this is also a novel finding. Again, this study's identification of these domains presents a continued opportunity for additional research to potentially gain ground on successful adherence strategies in this fragile patient population.

Generalizability. The case study method used was intended to deeply explore one facility's ICU staff's experience with the phenomenon of interest. Responses to the questions were specific to the experiences, culture, and perceptions of those participants only. Based on this unit-specific approach, this study is limited in generalizability to other facilities (Creswell, 2011).

However, it should be noted that the results of this study align with the only other MV/T study identified in the literature using the TDF (Goddard et al., 2018). Using a purposeful sampling of 10 participants from varied HCPs, the study explored adherence factors to early mobility in the mechanically ventilated patient. Unlike this presented study, the researcher sampled participants from a social media group, representing various facilities rather than a case study design. Despite the differences in methods, both studies identified a high impact of TDF social domains. This strengthens the principle researcher's confidence that results could be validated and replicated using a similar design at another facility.

Recommendations for Further Research

Further research is recommended to explore the impact of TDF social domains on MV/T EBP adherence. This study was performed using one small sample in one critical care unit. Thus, replicating this study will be important to confirm the results were not unique to this unit. Replication is recommended in a variety of institutions as this was specific to moderate-sized,

rural hospital on the southeastern U.S. Variation to location, type of critical care unit, and size of the unit may provide different results. Diversity in culture, policies, staff experience, and patient age-populations will likely add depth and variation to the findings in this study. Further research in additional locations will allow researchers to understand if social and belief factors remain a highly rated response in these variable environments.

It may be beneficial to understand how staff perceives the importance of the modifying factors in adherence. This study did not ask participants to rank how impactful an adherence factor was perceived. Instead, frequency of responses was utilized to demonstrate level of impact in this study. Adding a method for participants to self-rank impact would allow researchers to further explore how each domain impacts adherence.

This study did not objectively measure adherence. Rather, this study was restricted to exploring perceptions. To truly understand the effects of social domains, an objective measurement of adherence would be necessary. Finally, once more research has established the connection between social domains and adherence, strategies may be customized, and again experimentally measured, to determine the effectiveness of the socially-targeted strategies on adherence, as well as patient outcomes.

Conclusion

This qualitative case study was rooted in theory, literature, and principle researcher experiences. Using these foundations, RQs were posed to meet the objective to explore how MV/T HCP overlap impacts adherence, and how using the TDF social domains, this study may add to the gap in knowledge to develop strategies for transformational leadership and education. The literature reviewed identified gaps leading to the development while aligning with findings identified in the analysis.

The study resulted in expected findings, in alignment with the literature and the conceptual framework, identifying strong links with TDF social domains and factors in adherence. Unexpected results included a strong presence of the belief domains; however, a re-review of literature found some similar findings. Limitations exist in the methodology but were modified by validation methods as much as possible. In all, the principle researcher is confident results represent the intended objective of the study.

Implications to practice are recommended based on the results of this study. Due to the high frequency of the social and belief domains, is would be important to incorporate these factors into strategies for transformational change of HCP behaviors. Behavior change is complex and consists of various barriers to adherence. The findings of this study demonstrate the importance of attempting to strategize behavioral strategies to include social and belief domains. This can include peer champions to provide positive peer pressure, clarifying roles through well-socialized policies, and frequent sharing of the impact of adherence on patient outcomes. By targeting strategies with domains ranked highly by participants, healthcare facilities can tailor implementation plans.

Though this study adds valuable information to the large gap in TDF literature in this patient population, more research is needed to explore the findings of this study further. Limitations include one small sample within one facility, and adherence was not measured. Additional research is essential to understand if these results are unique or if similar findings can be replicated. The actual impact on adherence will also be critical to understanding once strategies are implemented.

In all, this study adds to the knowledge gap of EBP in MV/T population using the TDF domains. Aimed to explore the social influence on EBP, this study identified key factors

contributing to adherence or the lack thereof in this unique patient population. The potential

significance of this study, and others like it, includes a direct impact on improving adherence,

and in turn, positively impacting patient outcomes and economical healthcare savings by

preventing MV/T adverse events.

References

Abode, K., Drake, A., Zdanksi, Retsch-Bogart, G., Gee, A., Noah, T. (2016). A multidisciplinary children's airway center: Impact on care of patients with tracheostomy. *Pediatrics, 137*(2), 1–9. https://doi.org/10.1542/peds.2015-0455

Al Sindi, M., Sarwani, S., & Sarwani, O. (2016). The impact of specialized tracheostomy care team. *Bahrain Medical Bulletin, 38*(2), 94–96. Retrieved from http://www.bahrainmedicalbulletin.com/

American Nurse Association. (2019). What is nursing? Retrieved from https://www.nursingworld.org/practice-policy/workforce/what-is-nursing/

Archer, B. (2002). *Transformation in public organizations* (Doctoral Dissertation). School of Policy, Planning, and Development, University of Southern California. Los Angeles, California.

Atkins, L., Francis, J., Islan, R., O'Connor, D., Patey, A., Ivers, N., . . . Miche, S. (2017). A guide to using the Theoretical Domains Framework of behavior change to investigate implementation problems. *Implementation Science*, *12*(77), 1–18. https://doi.org/10.1186/s13012-017-0605-9

Baxter, P., & Jack, S. (2008). Qualitative case study methodology: Study design and implementation for novice researchers. *The Qualitative Report, 13*(4), 544–559. Retrieved from https://nsuworks.nova.edu/tqr/vol13/issu4/2

Berger, R. (2015). Now I see it, now I don't: Researcher's position and reflexivity in qualitative research. *Qualitative Research, 15*(2), 219–234. https://doi.org/10.1177/1468794112468475

Birt, L., Scott, S., Cavers, D., Campbell, C., & Walter, G. (2016). Member-checking: A tool to

    enhance trustworthiness or merely a nod to validation. *Qualitative Health Research,*

    https://doi.org/10.1177/1049732316654870

Cane, J., O'Connor, D., & Michie, S. (2012). Validation of the theoretical domains framework

    for use in behavior change and implementation research. *Implementation Science, 7*(37),

    1–7. https://doi.org/10.1186/1748-5908-7-37

Caruana, E. J., Roman, M., Hernandez-Sanchez, J., & Solli, P. (2015). Longitudinal studies.

    Journal of Thoracic Disease, 7(11), E537–E540. https://doi.org/10.3978/ j.issn.2072-

    1439.2015.10.63

Charlesworth, K., Jamieson, M., Davey, R., & Butler, C. (2016). Transformational change in

    healthcare: An examination of four case studies. *Australian Health Review, 40*, 163–167.

    https://doi.org/10.1071/AH15041

Cheung, N., & Napolitano, L. (2014). Tracheostomy: Epidemiology, indications, timing,

    technique and outcomes. *Respiratory Care, 59*(6), 895–919.

    https://doi.org/10.4187/respcare.02971

Christie, M., Carey, M., Robertson, A., & Grainger, P. (2015). Putting transformative learning

    theory into practice. *Australian Journal of Adult Learning, 55*(1), 9–30. Retrieved from

    https://www.ajal.net.au/

Craig, L., Taylor, N., Grimley, R., Cadihac, D., McInnes, E., Phillips, R., . . . Middleton, S.

    (2017). Development of a theory informed implementation intervention to improve the

    triage, treatment and transfer of stroke patients in emergency departments using the

    Theoretical Domains Framework: The T3 trial. *Implementation Science, 12*(88), 1–17.

    https://doi.org/10.1186/s13012-017-0616-6

Creswell. J. (2011). *Qualitative inquiry and research design* (3rd ed.). Washington, D.C.: Sage

    Publishing.

Curtis, K., Van Pharm, C., Lam, M., Asha, S., Unsworth, A., Clements, A., & Atkins, L. (2018).

    Implementation, evaluation, and refinement of an intervention to improve blunt chest

    injury management: A mixed-methods study. *Journal of Clinical Nursing, 26*, 4506–

    4518. https://doi.org/10.1111/jocn.13782

Cutliffe, J., & McKenna, H. (1999). Establishing the credibility of qualitative research findings:

    The Plot Thickens, 30(2), 374-380.

Dixon, L., Mascioli, S., Mixell, J., Gillin, T., Upchurch, C., & Bradley, K. (2018). *Advanced*

    Critical Care, 29(4), 426–431. https://doi.org/10.4037/aacnacc2018426

D'Haese, J., Diukeleire, T., Remory, I., Van Rompaey, K., Umbrain, V., & Poelaert, J. (2013).

    Assessment of intraoperative microaspiration: Does a modified cuff shape improve

    sealing? *Acta Anaesthesiologica Scandinavica Foundation, 57*, 873–880.

    https://doi.org/10.111/aas.12199

Debano, D., Taylor, N., Kipworth, W., Greenfield, D., Travaglia, J., Black, D., & Braithwaite, J.,

    (2017). Applying the Theoretical Domains Framework to identify barriers and targeted

    interventions to enhance nurses' use of electronic medication management systems in

    two Australian hospitals. *Implementation Science, 12*(42), 1–13. https://doi.org/

    0.1186/s13012-017-0572-1

Doherty, J., Crelia, S., Smith, M., Rosenblum, S., Rumsey, E., Mabry-Hernandez, I., et al.

    (2017). Large health systems' prevention guideline implementation: A qualitative study.

    American Journal of Preventive Medicine, 54, S88–S94.

    https://doi.org/10.1016/j.amepre.2017.07.025

Doody, O., & Doody, C. (2012). Transformational leadership in nursing practice. *British Journal of Nursing, 21*(20), 1212–1218. https://doi.org/10.12968/bjon.2012.21.20.1212

Federation of the State Medical Boards of the U.S. (2005). *Assessing scope of practice in health care delivery: Critical questions in assuring public access safety.* Retrieved from https://www.fsmb.org/

Fischer, S. (2016). Transformational leadership in nursing: A concept analysis. *Journal of Advanced Nursing, 72*(11), 2644–2653. https://doi.org/10.1111/jan.13049

Fisher, M., & Oster, C. (2017). Application of standardization artificial airway care to improve patient safety in the outpatient setting. *Head and Neck Nursing, 35*(3), 12–24.

Gallagher-Ford, L. (2014). Implementing and sustaining EBP in real world healthcare settings: Transformational evidence-based leadership: Redesigning traditional roles to promote and sustain a culture of EBP. *Worldviews on Evidence-Based Nursing, 11*(2), 140–142. https://doi.org/10.1111/wvn.12033

Guthrie, P., Rayborn, S., Boatright, J., Pearson, V., Wieeting, R., Peterson, R., & Danahy, M. (2018). Improving resident oral health and adherence to a ventilator associated pneumonia bundle in a skilled nursing facility. *Journal of Nursing Care Quality, 33*(4), 316–325. http://doi.org./10.1097/NCQ.0000000000000321

Goddard, S., Koo, E., Rose, L., Fan, E., Kho, M. E., Needham, D, . . . Cuthbertson, B. (2018) Barriers and facilitators to early rehabilitation in mechanically ventilated patients: A theory-driven interview study. *Journal Intensive Care, 6*(4), 1–8. https://doi.org/10.1186/s40560-018-0273-0

Haberg, C. (2012) *Benumof and Hagberg's Airway Management* (3rd ed.). Philadelphia, PA: Saunders.

Hess, D., & Altobelli, N. (2014). Tracheostomy tubes. *Respiratory Care, 59*(6), 956–973.

  https://doi.org/1 0.4187/respcare.02920

Hurst, S., Arulogun, O., Owolabi, A., Akinyemi, R., Uvere, E., Warth, S., & Ovbiagele. (2015).

  Pretesting qualitative data collection procedures to facilitate methodological adherence

  and team building in Nigeria. *International Journal Qualitative Methods, 14*, 53–64.

Jansson, M., Ala-Kokko, T., Ylipalosaari, P., Syrjala, H., & Kyngas, H. (2013). Critical care

  nurses' knowledge of, adherence to, and barrier toward institution specific ventilator

  bundle. *Intensive and Critical Care Nursing, 29,* 216–227.

  https://doi.org/10.1016/j.iccn.2013.02.006

Jansson, M., Kaariainen, M., & Kyngas, H. (2013). Effectiveness of educational programs in

  preventing ventilator-associated pneumonia: A systematic review. *Journal of Hospital*

  Infection, 84, 206–2014. https:// doi.org/10.1016/j.jhin.2013.04.009

Jannson, M., Hannu, S., Talman, K, Merilainen, M., & Kokko, T. (2018). Critical care nurses'

  knowledge of, adherence to, and barrier toward institution specific ventilator bundle.

  American Journal of Infection Control, 46, 1051–1060.

  https://doi.org/10.1016/j.ajic.2018.02.004

Johnson, R. B., & Onwuegbuzie, A. J. (2004). Mixed methods research: A research paradigm

  whose time has come. *Educational Researcher, 33*(7), 14–26.

Jun, J., Kovner, C., & Stimpfel, A. (2016). Barriers and facilitators of nurses' use of clinical

  practice guidelines: An integrative review. *International Journal of Nursing Studies, 60*,

  54–68. https://doi.org/10.1016/j.ijnurstu.2016.03.006

Jylha, V., Oikarainen, A., Perala, M. P, & Holopainen, A. (2017). Facilitating evidence-based

  practice in nursing and midwifery in the WHO European Region. *World Health*

Organization. Retrieved from

http://www.euro.who.int/__data/assets/pdf_file/0017/348020/WH06_EBP_report_compl

ete.pdf?ua=1

Khan, R. M., Al-Juaid, M., Al-Mutairi, H., Bibin, G., Alchin, J., Matroud, A., . . . Arabi, Y.

(2019). Implementing the comprehensive unit-based safety program model to improve

the management of mechanically ventilated patients in Saudi Arabia. *American Journal*

of Infection Control, 47(1), 51–58. https://doi-org/10.1016/j.ajic.2018.06.022

Klompas, M., Anderson, D., Trick, W., Babcock, H., Kerlin, M., Lingling, L., . . . Platt, R.

(2013). The preventability of ventilator-associated events. *American Journal of*

Respiratory and Critical Care Medicine, 191(3), 292–301.

https://doi.org/10.1164/rccm.201407-1394OC

Klompas, M., Branson, R., Eichenwald, E., Greene, L., Howell, M., Lee, G., . . . Berenholtz, S.

(2014). Strategies to prevent ventilator-associated pneumonia in acute care hospitals:

2014 update. *Infection Control and Hospital Epidemiology, 25*(S2), S133–S154.

https://doi.org/10.1086/677144

Lipworth, W., Taylor, N., & Braithwaite, J. (2013). Can the theoretical domains framework

account for the implementation of clinical quality interventions? *BMC Health Services*

Research, 13(540), 1–13. https://doi.org/1472-6963/13/530

Mah, J., Staff, I., Fisher, S., & Butler, K. (2017). Improving decannulation and swallowing

function: A comprehensive, multidisciplinary approach to post-tracheostomy care.

Respiratory Care, 62(2), 137–143. https://doi.org/ 10.4187/respcare.04878

McConnell, R., Kerlin, M., Scheweickert, W., Ahmad, R., Patel, M., & Fuchs, B. (2016). Using

a post-intubation checklist and time out to expedite mechanical ventilation monitoring:

Observational study of a quality improvement intervention. *Respiratory Care, 61*(7),
902–912. https://doi.org/ 10.4l87/respcare.04191

McEvoy, T., Seim, N., Aljasser, A., Elmaraghy, C., Ruth, B., Justice, L., . . . Jatana, K. (2017).
Prevention of post-operative pediatric tracheotomy wounds: A multidisciplinary team
approach. *International Journal of Pediatric Otorhinolaryngology, 97*, 235–239.
https://doi.org/10.1016/j.ijporl.2017.03.037

McGrath B., Lynch J., Bonvento, B., Wallace, S., Poole, V., Farrell, A., . . . Roberson, D. (2017).
Evaluating the quality improvement impact of the Global Tracheostomy Collaborative in
four diverse NHS hospitals. *BMJ Quality Improvement Reports*, *6*, 1–8.
https://doi.org/10.1136/ bmjquality.u220636.w7996

McKeon, M., Munhall, D., Walsh, B., Nuss, R., Rahbar, R., Volk, M., . . . Watters, K. (2018). A
standardized closed loop system for monitoring pediatric tracheostomy related adverse
events. *The Laryngoscope, 128*, 2419–2424. https://doi.org/ 10.1002/lary.27251

Melnyk, B., Gallagher-Ford, L, Zellefrow, C., Tucker, S., Thomas, B., Sinnott, L., & Tan, A.
(2018). The first U.S. study on nurses' evidence-based practice competencies indicates
major deficits that threaten healthcare quality, safety, and patient outcomes. *Worldviews
Evidence Based Nursing, 15*(1), 16–25. https://doi.org/10.1111/wvn.12269

Mertler, C. A. (2015). *Introduction to educational research*. Washington, D.C.: Sage Publishing.

Mezirow, J. (1991). *Transformational dimensions of adult learning*. San Francisco, CA: Josey
Bass.

Miche, S., Johnston, M., Abraham, C., Lawton, R., Parker, D., & Walker, A. (2005). Making
psychological theory useful for implementing evidence based practice: A consensus

approach. *Quality Safety Health Care, 14*, 26–33.

https://doi.org/10.1136/qshc.2004.011155

Miche, S., van Stralen, M., & West, R. (2011). The behavior change wheel: A new method for

characterizing and designing behavior change interventions. *Implementation Science,*

6(42), 1–12. https://doi.org/10.1186/1748-5908-6-42

Mitchell, R., Hussey, H., Setzen, G., Jacobs, I., Nussenbaum, B., Dawson, C., . . . Merati, A.

(2013). Clinical consensus statement: Tracheostomy care. *Otolaryngology-Head and*

Neck Surgery, 148(1), 6–20. https://doi.org/10.1177/0194599812460376

Morris, A., & Faulk, D. (2012). *Transformative learning in nursing: A guide for nurse*

educators. New York, New York: Springer Publishing.

Morris, L., Whitmer, A., & McIntosh, E. (2013). Tracheostomy care and complications in the

intensive care unit. *Critical Care Nurse, 33*(5), 18–29.

https://doi.org/10.4037/ccn2013518

National Institutes of Health. (2013). *Implementation science information and resources*.

Retrieved from http://www.fic.nih.gov/researchtopics/pages/implementationscience.aspx.

Nohl, A. (2015). Typical phases of transformative learning: A practice-based model. *Adult*

Education Quarterly, 65(1), 35–49. https://doi.101177/0741713614558582

Nyeo, H., Ting, K., & Tho, P. (2016). Reduce ventilator associated pneumonia rate in the

coronary care unit: An evidence-based implementation project. *Singapore Nursing*

Journal, 43(2), 28–34.

Polit, D.F., & Beck, C.T. (2004). *Nursing Research: Principles and Methods* (7th ed.).

Philadelphia, PA: Lippincott Williams & Wilkins.

Roberts, N., Lorencatto, F., Manson, J., Brundage, S., & Jansen, J. (2016). What helps or hinders the transformation from a major tertiary center to a major trauma center? Identifying barriers and enablers using the Theoretical Domains Framework. *Scandinavian Journal of Trauma, Resuscitation and Emergency Medicine, 24*(30), 1–15. https://doi.org/10.1186/s13049-016-0226-3

Romaine, P. (2015). Conflicts of interest in research: Looking out for number one means keeping the primary interest front and center. *Current Rev Musculoskelet Med, 8,* 122–127. https://doi.org/10.1007/s12178-015-9270-2

Saldaña, J. (2015). *The Coding Manual for Qualitative Researchers.* (3rd ed.). London, England: Sage Publications.

Shin, H., Kim, D., Yoo, H., Lee, D., Yoo, Y., & Lim, C. (2015). Changes in cuff pressure and position of cylindrical-cuff and tapered-cuff tracheal tube during laprascopic abdominal surgery. *Journal of International Medical Research, 43*(4), 544–554. https://doi.org/10.1177/0300060515581670

Shuman, C., Powers, K., Banaszak-Holl, J., & Titler, M. (2019). Unit leadership and climates for evidence-based practice implementation in acute care: A cross sectional descriptive study. *Journal of Nursing Scholarship, 51*(1), 114–124. https://doi.org/10.1111/jnu.12452

Sims, J. (2015). What is the transformational learning experience of secondary teachers who have dealt with burnout? *Adult Education Research Conference.* Retrieved from https://pdfs.semanticscholar.org/6028/611dbe19e716a8b655324f2b35d2806bdf19.pdf

Silva M., & Ludwick, R. (1999). Ethics: Interstate nursing practice and regulation: Ethical issues for the 21st century. *The Online Journal of Issues in Nursing, 4*(2), 1–4. Retrieved from

www.nursingworld.org//MainMenuCategories/ANAMarketplace/ANAPeriodicals/OJIN/

TableofContents/Volume41999

Southcott, A., Holdsworth, C., Malcolm, L., Muruganandan, S., & Skinner, E. (2019).

Evaluation of the implementation of a tracheostomy review services (TRS): An

observational cohort study. *Journal of Interprofessional Care*, 1–9.

https://doi.org/10.1080/13561820.2019.1566216

Sousa, A., Ferrito, C., & Paiva J. (2019). Application of a ventilator associated pneumonia

prevention guideline and outcomes: A quasi-experimental study. *Intensive & Critical*

Care Nursing, 51, 50–56. https://doi.org/10.1016/j.iccn.2018.10.001

Speroff, T., & O'Connor, G. T. (2004). Study designs for PDSA quality improvement research.

Quality Management Health Care, 13(1), 17–32. Retrieved from

https://journals.lww.com/qmhcjournal/pages/default.aspx

Suter, W. N. (2012). *Introduction to educational research: A critical thinking approach*. (2nd

ed.). London, England: Sage Publications.

Timsit, J., Esaied, W., Neuville, M., Bouadma, L., & Mourvillier, B. (2017). Update on

ventilator associated pneumonia. *F1000 Research 2017, 6–13.*

https://doi.org/10.12688/f1000research.12222.1.

Tucker, S. (2019). Implementation: The linchpin of evidence-based practice changes. *American*

Nurse Today, 14(3), 8–13. Retrieved from

https://www.americannursetoday.com/implementation-linchpin-evidence-based-practice-

changes/

Tufford, L., & Newman, P. (2010). Bracketing in qualitative research. *Qualitative Social Work.*

https://doi.org/10.1177/147332501036831

REDACTED Department of Health Professions (2019). *Law and Policy*. Retrieved from

    https://www.REDACTED.gov/

Wagner, K., Hardin-Pierce, M., & Welch, D. (2018). *High Acuity Nursing* (7th ed.). New York,

    NY: Pearson Publishing.

Wang, L., Tao, H., Bowers, B, Brown, R., & Zhang, Y. (2017). When nurse emotional

    intelligence matters: How transformational leadership influences intent to stay. *Journal of*

    Nursing Management, 26, 358–365. https://doi.org/10.1111/jonm.12509

Welton, C., Morrison, M., Cataligh, M., Chris, J., & Pataki, J. (2016). Can an interprofessional

    tracheostomy team improve weaning to decannulation times? A quality improvement

    evaluation. *Canadian Journal of Respiratory Therapies, 52*(1), 7–11.

    https://doi.org/10.1136/ bmjquality.u220636.w7996

Wolfensberger, A., Meier, M., Clack, L., Schreiber, P., & Hugo, S. (2018). Preventing ventilator

    associated pneumonia: A mixed method study to find behavioral leverage for better

    protocol adherence. *Zurich Open Repository and Archive, 39*(10), 1222–1229.

    https://doi.org/10.1017/ice.2018.195

World Health Organization. (2017). *Intubation Rates*. Retrieved from

    https://www.who.int/gpsc/5may/registration_update/en/

Wylie, D., & Gallagher, H. (2009). Transformational leadership behaviors in allied health

    professions. *Journal of Allied Health, 38*(2), 65–72. Retrieved from

    http://www.asahp.org/journal-of-allied-health

Yin, R. (2014). *Case study research.* (5th ed.). Los Angeles, CA: Sage Publishing

Appendix A: Participant Interview Instrument

#	Item	Related RQ
1.	What is your current title and role in the critical care unit?	Demographical
2.	How long have you worked in this role?	Demographical
3.	Can you list the actions or tasks you perform for intubated or tracheostomy patients that align with EBP to prevent harm or infection, or improve patient outcomes? These tasks may include but are not limited to: • oral care, • elevated head of bed positioning (HOB), • tracheal cuff pressure maintenance, • subglottic secretion drainage suction (SSD), • sedation vacation (Sed Vac), and • spontaneous breathing trials (SBT)	
4.	Do you feel you and your group are primarily responsible for these tasks or do you believe it is a shared task? If yes, what group shares responsibility? <table><tr><td>Task</td><td>Yes</td><td>No</td><td>Shared HCP</td></tr><tr><td>Oral Care</td><td></td><td></td><td></td></tr><tr><td>HOB</td><td></td><td></td><td></td></tr><tr><td>Cuff</td><td></td><td></td><td></td></tr><tr><td>SSD</td><td></td><td></td><td></td></tr><tr><td>Sed Vac</td><td></td><td></td><td></td></tr><tr><td>SBT</td><td></td><td></td><td></td></tr></table>	RQ1, RQ2
5.	*If applicable, based on affirmation of the previous question*: Do you feel that sharing this task among HCP increases or decreases adherence to the task? If so, how?	RQ2, RQ3
6.	Can you describe any expectations that you feel others have for you and your HCP discipline in the care of MV/T EBP? This expectation may be from other primary HCPs, hospital leadership, and/or your profession.	RQ1
7.	How do you feel these expectations impact the adherence to MV/T tasks?	RQ2, RQ3
8.	Are you aware of any policies that may define MV/T tasks and assign to one primary HCP discipline? If so, do you feel the policy aligns with what occurs in patient care?	RQ1
9.	Are there any reporting practices (i.e., feedback, recognition, discipline) related to EBP tasks or MV/T outcomes that influence EBP adherence? Is this reporting multidisciplinary or specifically related to your HCP discipline?	RQ1, RQ2, RQ3
10.	Can you think of any other motivators or barriers to completing MV/T EBP tasks not discussed so far? How does it impact the completion of these tasks?	RQ1, RQ3

Appendix B: Nurse Manager Interview Instrument

#	Item	Related RQ
1.	What is your current title and role in the critical care unit?	RQ1
2.	How long have you worked in this role?	RQ1
3.	What HCP discipline is primarily responsible for these tasks, or can you identify what disciplines share the tasks? Check all that were mentioned. 	Task	MD	RT	RN	UAP
------	----	----	----	----
Oral Care				
HOB				
Cuff				
SSD				
Sed Vac				
SBT						RQ1, RQ2
4.	Do you feel task overlap between discipline impacts adherence to MV/T tasks? If so, how?	RQ1, RQ2, RQ3
5.	Are you aware of any policies that may define MV/T tasks and assign to one primary HCP discipline? If so, do you feel the policy aligns with what occurs in patient care?	RQ1
6.	Are there any reporting practices (i.e., feedback, recognition, discipline) related to EBP tasks or MV/T outcomes that influence EBP adherence?	RQ1, RQ2, RQ3
7.	Can you think of any other motivators or barriers to completing MV/T EBP tasks not discussed so far? How does it impact the completion of these tasks?	RQ1, RQ3

Appendix C: Unit Policies

REDACTED CARDIOPULMONARY SERVICES	
DEPARTMENT: RESPIRATORY THERAPY	PAGE: 1 OF 4
SUBJECT: ADULT MECHANICAL VENTILATION	EFFECTIVE: 07/1996
APPROVED BY: _____ REDACTED Director Cardiopulmonary Services	REVIEWED: '99, '01, '02, 10/6/07
APPROVED BY: _____ REDACTED Medical Director Respiratory Therapy	REVISED: '98, '00, '03, '04, 12/05, 5/09, 6/2010, 12/2011, 4/2013, 3/14, 9/14

PURPOSE:
- To provide ventilator operational guidelines for the Respiratory Therapists as physician orders are implemented.
- The following guidelines are to be followed at all times for physician or protocol management of the patient.

POLICY:
Under this policy adult refers to patients sixteen years old and older. A physician's order is needed for all ventilator changes. However, the physician may order the implementation of the Adult Ventilator Protocol at anytime and have management of the patient/ventilator interface initiated and monitored by qualified Respiratory Therapists.

- Physician's orders are required for commitment to the ventilator and for all subsequent ventilator changes. However, the physician may wish to use the Adult Ventilator Protocol as a tool to manage the patient/ventilator. The physician would need to request the protocol. (See Adult Ventilator Management by Protocols).
- All ventilator settings for pediatric, infant, and neonates must be issued by the physician directly, either verbally and/or written. There are no protocols to cover this patient population.
- Respiratory Therapists are to provide all technical aspects of mechanical ventilation under the direction of the ordering physician and the oversight of the CPS Medical Director.
- Once stable, all ventilator patients will be evaluated for readiness to wean each day. If the patient meets weaning criteria, the physician will be notified for weaning orders.
- Mechanical Ventilation is initiated in any care setting within REDACTED but can only be maintained in REDACTED Special Care Units. The Division of Nursing Vice President, on a case by case basis, may approve other hospital areas.
- The Respiratory Therapists will coordinate all significant ventilator changes with the patient's physician, RN and other involved healthcare workers as appropriate.
- The Patient will be re-assessed/evaluated completely each two (2) hours. This is documented in i-View and on the interdisciplinary progress notes as appropriate.

Appendix D: VAP Tracker Image Taken on the Unit

Appendix E: IRB Permission Letter

CONCORDIA
UNIVERSITY

-PORTLAND, OREGON-

DATE: January 10, 2020
TO: Katie Bull
FROM: Concordia University–Portland IRB (CU IRB)

PROJECT TITLE: [1517866-1] Using the Theoretical Domain Framework (TDF) to identify social factors contributing to lack of adherence to evidence-based practice by three primary healthcare provider (HCP) disciplines in the care of the mechanically ventilated / tracheostomy patient population.

REFERENCE #: REDACTED
SUBMISSION TYPE: New Project
ACTION: APPROVED

APPROVAL DATE: January 8, 2020
EXPIRATION DATE: January 8, 2021
REVIEW TYPE: Expedited Review

Thank you for your submission of New Project materials for this project. The Concordia University - Portland IRB (CU IRB) has APPROVED your submission. This approval is based on an appropriate risk/ benefit ratio. All research must be conducted in accordance with this approved submission.

This submission has received an Expedited Review based on the applicable federal regulations.

You are responsible for contacting and following the procedures and policies of Concordia University and any other institution where you conduct research. You will need their permission there before you begin recruiting or doing other research within (or with the resources of) that institution.

Attached is a stamped copy of the approved consent form. You must use this stamped consent form. Please remember that informed consent is a process of describing the project, affirming clear participant understanding, providing the participant with a copy, and obtaining a signed consent form. Informed consent must continue throughout the project via a dialogue between the researcher and research participant. Federal regulations require that each participant receives a copy of the consent document.

Please note that any revision to previously approved materials must be approved by this committee prior to initiation. The form needed to request a revision is called a Modification Request Form, which is available at REDADCTED.

All UNANTICIPATED PROBLEMS involving risks to subjects or others and SERIOUS and UNEXPECTED adverse events must be reported promptly to this office. Please email the CU IRB Director directly, at REDACTED, if you have an unanticipated problem or other such urgent question or report.

All NON-COMPLIANCE issues or COMPLAINTS regarding this project must be reported promptly to this office.
This project requires continuing review by this committee on an annual basis. Please use the appropriate forms for this procedure. Your documentation for continuing review must be received for review and continued approval at least 4 weeks before the expiration date.

You must submit a close-out report at the expiration of your project or upon completion of your project. The Close-out Report Form is available at REDACTED.

Please note that all research records must be retained for a minimum of 3 years after the completion
of the project.

If you have any questions, please contact REDACTED

Please include your project title and reference number in all correspondence with this committee.

The Concordia University Doctorate of Education Program is a collaborative community of scholar-practitioners, who seek to transform society by pursuing ethically-informed, rigorously-researched, inquiry-based projects that benefit professional, institutional, and local educational contexts. Each member of the community affirms throughout their program of study, adherence to the principles and standards outlined in the Concordia University Academic Integrity Policy. This policy states the following:

Statement of academic integrity

> As a member of the Concordia University community, I will neither engage in fraudulent or unauthorized behaviors in the presentation and completion of my work, nor will I provide unauthorized assistance to others.

Explanations:

What does "fraudulent" mean?

"Fraudulent" work is any material submitted for evaluation that is falsely or improperly presented as one's own. This includes, but is not limited to texts, graphics and other multi-media files appropriated from any source, including another individual, that are intentionally presented as all or part of a candidate's final work without full and complete documentation.

What is "unauthorized" assistance?

"Unauthorized assistance" refers to any support candidates solicit in the completion of their work, that has not been either explicitly specified as appropriate by the instructor, or any assistance that is understood in the class context as inappropriate. This can include, but is not limited to:

- Use of unauthorized notes or another's work during an online test
- Use of unauthorized notes or personal assistance in an online exam setting
- Inappropriate collaboration in preparation and/or completion of a project
- Unauthorized solicitation of professional resources for the completion of the work. 51 Statement of Original Work (Continued)

Statement of Original Work (Continued)

I attest that:

1.   I have read, understood, and complied with all aspects of the Concordia University–Portland Academic Integrity Policy during the development and writing of this dissertation.

2.   Where information and/or materials from outside sources has been used in the production of this dissertation, all information and/or materials from outside sources has been properly referenced and all permissions required for use of the information and/or materials have been obtained, in accordance with research standards outlined in the *Publication Manual of The American Psychological Association*.

Katie Michelle Spitler Bull
Digital Signature

Katie Michell Spitler Bull
Name (Typed)

4/13/2020
Date