Expanding the Care of Hospice Patients Across a Mobile Integrated Health System

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Abstract

Transport demands for hospice patients are increasing, but mobile integrated health (MIH) providers report feeling ill-equipped to meet such demands due to the limited clinical guidance in their treatment protocols. This quality improvement (QI) initiative aimed to expand an MIH team's capabilities of providing safe, comfortable transports for hospice patients by improving their knowledge of end-of-life (EOL) care. Primary interventions included deploying a hospice training program and clinical guidance through a comprehensive hospice patient treatment protocol for use in the transport setting. A continuous QI process accompanied the protocol implementation, which evolved through three Plan Do Study Act (PDSA) cycles over twelve weeks. Data were collected from provider assessments and patient documentation before and after the education program and protocol implementation and then analyzed to determine the effects of the interventions on hospice patients and MIH providers. Approximately 98% of hospice patient encounters reported improvement in comfort-related assessments and demonstrated protocol compliance. Provider clinical knowledge scores improved by an average of 37.66%. The amount of MIH providers reporting feeling uncomfortable providing care to hospice patients decreased by an average of 61.1%. MIH provider clinical competence in and comfort with providing EOL improved following dissemination of the hospice-focused education program and accompanying clinical guidance, each part of the quality improvement initiative developed and implemented through a Doctor of Nursing Practice project.

Keywords: hospice, palliative, mobile integrated health, transport

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Section I. Introduction

Background

This Doctor of Nursing Practice (DNP) project is being completed within a multi-state, non-profit healthcare system's Mobile Integrated Health (MIH) division. Striving for health equity, this organization's mission statement is "to exist to improve the health of communities, one person at a time" (Novant Health New Hanover Regional Medical Center [NHNHRMC], 2022a, para. 1). In early 2021, the organization acquired a comprehensive county-owned system in coastal North Carolina (NC), consisting of three hospitals and dozens of outpatient facilities served by over 200 providers and nearly 8,000 employees. At the heart of the organization is its oldest and largest facility, an 800-bed acute care hospital (NHNHRMC, 2022c, 2022d). Since its opening in 1967, the system's size and capabilities have grown exponentially (NHNHRMC, 2022a). In 2021, to better serve its region, the organization merged its emergency medical service (EMS), critical care transport (CCT) service, non-emergency transport service, and community paramedic service to form a comprehensive team of providers now known as the Mobile Integrated Health (MIH) division. Since the system's first critical care transport in 1991 and its first emergency response in 1998, there has been a continuous increase in patient transport requests and demands for more specialized care (NHNHRMC, 2022b). The MIH team has faced unprecedented challenges with the rise in transport volumes and patient needs amid a pandemic. Despite those challenges, the MIH team has continued to meet its region's demands; many expanded services were provided to a record-breaking over 60,000 patients in 2021 (MIH Clinical Outcomes and Compliance Manager, personal communication, July 1, 2022). The team's performance is only one of many reasons why MIH is recognized as an industry leader and one of the most progressive transport programs in the country (NHNHRMC, 2022b). Such accomplishments are not easily attained; they require an unwavering dedication to their patients and team, and an enduring commitment to continuous quality improvement (QI).

Organizational Needs Statement

The organization identifies a need for developing and implementing a comfort-focused treatment protocol to guide care during the transports of hospice patients transitioning from acute care settings to hospice care centers. The MIH division has been experiencing a rise in the transports of actively dying patients. Last year, its teams completed more than 1200 hospice transports, and its leaders predict surpassing that amount even sooner this year. The predominant cause has been a recent surge of an aging population relocating to an area that is also home to the region's only healthcare hub and its only inpatient hospice care center. The MIH division is an entity of the health care organization requesting most of these transfers and the only local agency capable of providing medical transport to the entire region's full spectrum of patient care needs. The MIH division comprises critical care trained registered nurses (RNs), paramedics, and emergency medical technicians (EMTs). It is responsible for rendering comprehensive care to patients in transit to specialized settings throughout its service area. Transporting hospice patients is not a new practice for this experienced and versatile team; even so, the increasing frequency of specialized requests reveals a growing ambiguity around treatment expectations while caring for patients at the end of life (EOL). MIH providers express that the ambiguity stems from a lack of guidance from their system's current transport protocols. The protocols do not address the unique needs hospice patients present with during interfacility transports (IFTs) to inpatient hospice care centers from acute care units, such as intensive care units (ICUs) or emergency departments (EDs). As a result, several providers share concerns that the lack of guidance leads to clinical decision burdens and fears of hindering the optimal patient and family experience such sensitive transitions deserve (MIH Clinical Outcomes and Compliance Manager, personal communication, July 1, 2022).

The MIH team is a unique coalescence of nursing, EMS, CCT, and hospital-based medicine. Such complexity results in its team being held to an accumulation of standards imposed by an extensive collection of accrediting bodies and professional organizations, which exceeds that of almost any other healthcare team within its organization. The MIH team works diligently to meet or exceed all standards and requirements set forth by these agencies. It always focuses on safe, high-quality patient care (MIH Clinical Outcomes and Compliance Manager, personal communication, July 1, 2022). Though there is a vast collection of standards, regulations, and guidelines influencing patient care, none exist specific to the care of hospice patients during transport. The Commission on Accreditation of Medical Transport Systems (CAMTS) and the Commission on Accreditation of Ambulance Services (CAAS) are two transport-specific accrediting agencies considered gold standards in the medical transport industry. Though neither commission has hospice or palliative care-focused standards, each requires continuous performance and QI measures in place for accreditation (Commission on Accreditation of Ambulance Services [CAAS], 2017; Commission on the Accreditation of Medical Transport Systems [CAMTS], 2022). Pertaining specifically to the medical transport industry and acknowledging this project's specific population, the vision of the EMS 2050 Agenda, the 2021 National EMS Education Standards, and a recent position statement from the National Association of Emergency Medical Services Physicians (NAEMSP) each make appeals for role expansion of EMS providers and demand an increased focus on EOL care in education curriculums (EMS 2050 Agenda Technical Expert Panel, 2019; National Association of EMS Physicians [NAEMSP], 2021; National Highway Traffic Safety Administration [NHTSA], 2021). Healthy People 2030 calls for improvements focused on social determinants of health (SDOH), such as setting goals for improving access to care and reducing anxiety and depression in caregivers of patients with disabilities. However, the interpretation and application of the broadly generalized goals to specific care types or populations is left up to the reader, as neither Healthy People 2030 nor Healthy NC 2030 specifically address hospice or palliative care in their visions for the future (North Carolina Institute of Medicine, 2020; Office of Disease Prevention and Health Promotion, n.d.).

This project serves as an evidence-based QI initiative. As such, it assists the MIH division in meeting the standards set forth by CAMTS and CAAS related to continual performance and QI measures. In addition, the project assists in meeting the goals set forth by the EMS 2050 Agenda, the National EMS Education Standards, and the NAEMSP through increasing education focused on EOL care and expanding the role of EMS providers within the community. As this project aims to expand the capabilities of the MIH team to facilitate transports to hospice care centers, it improves patient access to care by pairing patients nearing EOL with their most appropriate care settings. Doing so also assists in increasing the availability of acute care resources to patients requiring life-saving care. Additionally, it strives to improve caregiver experiences, meeting Healthy People 2030 goals. The project's efforts to advance evidence-based practice (EBP) and empower the MIH team with specialized education focused on health disparities and SDOH meet all three of the goals set by the Institute for Healthcare Improvement's (IHI) Triple Aim, in addition to the two other goals set by the more recently proposed Quintuple Aim (Institute for Healthcare Improvement [IHI], 2022b; Nundy et al., 2022). Robust and diverse industry persuasion is commonly the fulcrum for innovation within the MIH division, and the aims of such influences reinforce the value of this project; however, the primary driving force behind this QI initiative is the resolve to optimize the comfort of patients, their caregivers, and MIH providers experiencing EOL transitions.

Problem Statement

A recognized clinical knowledge gap exists in caring for hospice patients during IFTs. Despite their exceptional clinical expertise and ability to tactfully navigate critical situations, most MIH providers have little or no experience providing EOL care and are concerned about the possible consequences of inadequate care during such delicate encounters. MIH teams have a multitude of pharmacological and non-pharmacological interventions at their disposal. Still, current protocols limit such interventions' indications, dosages, and routes of administration (ROA) as they were not created for terminal patients transitioning from acute care settings to hospice care centers.

Purpose Statement

This project aims to develop and implement an evidence-based patient treatment protocol accompanied by a focused education program to optimize the comfort and safety of hospice patients, the experience of their caregivers, and the clinical confidence of MIH providers during transport between acute care settings and hospice care centers.

Section II. Evidence

Literature Review

A literature review was performed to understand better the current state of knowledge of hospice protocols and their use in the critical care transport setting while caring for adult patients transitioning from acute care settings to hospice care centers. With the specialized nature of this project's population and setting, it was anticipated that a thorough literature search and review may prove challenging. Before beginning the literature search, restructuring the project's problem statement into a PICO(T) question and creating concept maps assisted in forming a list of key search terms and determining inclusion and exclusion criteria. Melnyk & Fineout-Overholt's model for appraising evidence levels was referenced to assess each source's quality. The model uses a hierarchy rating scale ranging from level I through level VII, with level I designating the highest level of evidence (2019). Searches were performed through PubMed, Cumulative Index to Nursing and Allied Health Literature (CINAHL), Scopus, ProQuest, and Google Scholar databases. Initial searches included terms such as "transport," "hospice," "palliative," "acute care," "intensive care," "ICU," "critical care," "hospital," "emergency medical services," and "EMS" which were grouped into Boolean phrases using "OR" and "AND" operators based on the requirements of each database.

Filters and limits were applied to include only full-text, peer-reviewed sources published in English no earlier than 2017 and focused on the adult population. Zero results were returned, with additional filters for level III or higher studies. To enable more results, study-type filters were removed, though limits for peer-reviewed inclusions remained selected as available on each database. After excluding resulting sources related to pediatric patients, involving transitions between other settings, and any other erroneous results, so few quality sources remained that it became clear a more comprehensive search and synthesis would be required to develop a plan capable of meeting this unique population's specialized care demands. With assistance from a PhD-prepared librarian with specialized training in academic research and medical terminology, additional searches were performed with a broader range of search terms and types of sources to capture a more comprehensive body of information. Expansion of search terms included the addition of related subject terms, such as "end of life," "terminal," "dying," "emergency department," "mobile integrated health," "MIH," "ambulance," and "interfacility." Separate searches were performed with the same terms but modified to include the terms “guideline,” “protocol,” and “algorithm” to reveal any existing clinical practice guidelines, transport protocols, or treatment algorithms that may have been missed in previous searches.

After expanding the search terms, accumulating separate database searches resulted in 1598 total sources. Once erroneous subject limits and duplicate results were filtered, the remaining sources’ abstracts and key points were reviewed. If a source published since 2017 presented information supporting any standardized guidance to optimize the care of hospice patients or improve provider confidence and comfort, it was kept. After applying the previously described limitations and excluding erroneous, duplicate, and irrelevant results from each database search, 23 sources remained. None of the remaining sources offered evidence above level IV, meaning the evidence they provided was not of the highest quality that would be most preferred to influence a change in clinical practice. Of the 23 sources, six were professional organizations’ clinical practice guidelines or position statements. Each source was read thoroughly at least twice and reviewed several additional times to determine the quality and relevance of its content for resolving the project’s problem. Before discarding any source, its citation list was reviewed to identify any opportunities for backward or forward searches. One additional potentially relevant source was discovered, but it was later excluded as it did not offer any valuable information not presented by more recent publications. Ten level V, VI, and VII publications were retained, including systematic reviews of current practices, professional body position statements, and case studies involving EOL care and transport providers. An assessment of the retained sources is available for review in Appendix A. Though higher-level sources were not retained, it should be noted that the limited amount of high-quality literature reported as a barrier was a common theme encountered in most sources throughout this literature review.

Current State of Knowledge

Literature on hospice and palliative care transport is abundant, but it lacks quality for translation to EBP, a conclusion echoed by subject experts worldwide (Lin et al., 2021). What is more, the available literature is almost exclusively focused on pre-hospital EMS and community paramedics, and though pre-hospital EMS providers and community paramedics also frequently encounter terminal patients in their practice, neither provide the level of services between acute care settings and hospice care centers that the MIH team at this project site does (MIH Clinical Outcomes and Compliance Manager, personal communication, July 1, 2022). The available literature specific to adult hospice patients transferring between acute care settings and hospice care centers was even more scarce; the few available sources reviewed were either aimed at inpatient palliative care provider involvement in facilitating transfers or the personal experiences of the health care providers participating in palliative care rather than any treatments or therapies they administered. Of the limited sources found involving transports completed prior to care being withdrawn, almost all are pediatric-focused or concentrated on residential destinations rather than hospice care centers or other community-based settings. Thorough reviews of the initial search results, citation chaining, and additional searches performed later failed to lead to any additional quality, current, or relevant source specifically addressing this population and practice setting.

Current evidence-based knowledge relevant to critical care transport of hospice patients is extremely limited in quantity and quality, likely due to its highly specialized, infrequent nature and certainly due to a lack of associated research compared to other patient populations and settings (Juhrmann et al., 2022). Of the available literature, one of the main concerns of transport and facility-based providers across all disciplines is the need for standardized guidance for caring for hospice patients at the EOL. Uncertainty surrounding expectations for care is burdensome for providers, as it leaves them feeling they failed to meet their patients' needs (Fitzpatrick et al., 2022; Juhrmann et al., 2022; Killackey et al., 2020). Confidence in their clinical practice is not the only area many providers report they could improve when caring for patients at the EOL. Most providers also report decreased comfort levels during encounters with hospice patients compared to other patient populations, much of which has more to do with their patient and family interactions rather than the clinical aspects of care.

Interestingly, several sources reveal that after further study, a lack of specialized education and preparation for providers in caring for this population affects their perceived level of comfort or confidence rather than years of experience or the number of hospice patients encountered (Clemency et al., 2019; Fitzpatrick et al., 2022; Juhrmann et al., 2022). The use of protocols has long been the foundation for standardizing clinical practice in medical transport due to its dynamic environment and the all-inclusive patient population it serves (EMS 2050 Agenda Technical Expert Panel, 2019; Hanson & Kramp, 2022). Despite the established importance of protocols for guiding care and the fact that every medical transport agency in the United States has some form of treatment protocols or standing orders, studies have found that less than 10% of state-provided protocols provide hospice-specific guidance and of the protocols containing hospice-specific care, most are vague and centered around avoidance of transport in the pre-hospital setting (Fitzpatrick et al., 2022; Hanson & Kramp, 2022).

Current Approaches to Solving Population Problems

It is common to learn that more research is needed when a clinical concern is presented, regardless of the population or care setting. In other care arenas, even when it is realized that more research would further develop best practices, efforts should still be made to provide the best possible guidance using what evidence is currently available (Killackey et al., 2022; Lin et al., 2021). In addition to promoting standardized EBP in transport settings, specialized education on EOL care is on the rise to better prepare providers for palliative and hospice patient encounters (EMS Agenda Technical Expert Panel, 2019; Fitzpatrick et al., 2022; Leggio et al., 2021). To ensure providers are ready to care for patients at the EOL, some more frequently presented subjects addressed through specialized education in the literature include perceptions of death, prioritization of patient needs, emotional intelligence, communication skills, and symptom management. In the EMS systems studied, providing training on both EOL symptom management and techniques for communicating with patients and their loved ones is found to improve provider comfort levels for providing care to dying patients (Clemency et al., 2019; EMS Agenda Technical Expert Panel, 2019; Fitzpatrick et al., 2022; Juhrmann et al., 2022; Leggio et al., 2021).

Evidence to Support the Intervention

Treatment protocols are proven to result in better patient outcomes across multiple settings and patient populations when they are evidence-based, appropriately implemented, and consistently utilized. Though no study was available that focuses on a protocol so specific to include hospice patients being transported between acute care and inpatient hospice care settings, studies independently focused on either hospice patients or an included setting support the benefit of such clinical guidance (EMS 2050 Agenda Technical Expert Panel, 2019; Gallagher & Levy, 2021; Hanson & Kramp, 2022; Lin et al., 2021). Access to treatment protocols is also shown to have positive effects on provider confidence levels in the delivery of patient care, especially in more sensitive patient encounters, such as those that occur at the EOL (Juhrmann et al., 2021; Killackey et al., 2020; Leggio et al., 2021; National Consensus Project for Quality

Palliative Care [NCPQPC], 2018). Hospice and palliative care education and training programs successfully demonstrate improvements in provider comfort with sensitive patient and family encounters, confidence in their clinical capabilities, and rates of burnout (Fitzpatrick et al., 2022; Juhrmann et al., 2022; NCPQPC, 2018).

A recent systematic review encourages specialized palliative care education for providers involved in EOL care in acute and community settings. The evidence supports that such educational interventions improve patient outcomes, hospital readmission rates, resource utilization, and overall healthcare system expenditures. The education focused on the benefits of palliative care, palliative care interventions that could be provided to patients, and appropriate utilization of resources such as referrals to specialty providers, spiritual support services, and case managers (Saunders et al., 2019).

Evidence-Based Practice Framework

The Plan Do Study Act (PDSA) framework is an effective healthcare improvement method, especially for short-term QI processes. It is a process that evolves through revolving cycles of four actions. Each action is represented in succession in the framework’s name and includes the following: Planning the intervention, the *Plan* or *P* in PDSA; performing the intervention, the *Do* or *D*; analyzing the effect of the intervention, the *Study* or *S*; and, applying what is found to drive further change in an updated plan as needed, the *Act* or *A* (IHI, 2022a). The PDSA framework is frequently employed for QI initiatives at this project site and will be utilized throughout the implementation of this DNP project (NHNHRMC, 2019). A driver diagram for this project’s implementation plan can be viewed in Appendix B. In July 2023, the twelve-week implementation period for this project will begin, and the PDSA model will be applied monthly to evaluate the plan’s progress. Provider feedback and data related to protocol compliance and hospice transports will be collected and analyzed through each cycle. If any improvement opportunities for the project implementation plan are identified, the plan will be updated during the following cycle as approved by the project site champion and DNP project faculty until the twelve-week implementation period concludes.

Ethical Consideration & Protection of Human Subjects

Providing quality patient care requires prioritizing each patient's safety and comfort. A heightened attention to safety and comfort is even more imperative for patients undergoing the delicate transition at the EOL. As this project aims to improve patient comfort and safety, thorough considerations were made before implementation. It was determined through the utilization of research assessment tools provided by both the University and the project site's research department that this DNP project would result in no more than minimal risk to subjects encountered during its implementation. The implementation of the treatment protocol aims to be equal and equitable to all individuals in the project's target population, as it promotes the use of objective assessment methods for guiding clinical decision-making outlined by a standardized treatment protocol. The accompanying education to be delivered to the project site's providers with the protocol's implementation presents evidence-based clinical guidance. It addresses healthcare disparities, SDOH, cultural competence, and emotional intelligence applicable to patients and their caregivers experiencing EOL transitions. Prior to implementation, communication between members of the project team will include how any concern that arises regarding any of the subjects above from a patient, caregiver, provider, project site team member, stakeholder, project faculty, or any other involved party should be addressed; all concerns will be addressed immediately upon notification to, and with appropriate actions taken as determined necessary by the project team.

Formal approval granted by the University and the project site for this project required extensive preparation by the project leader. Institutional research, compliance, and ethics training was completed through the Biomedical Research Collaborative Institutional Training Initiative (CITI) Course during the first DNP project course in July 2022. The CITI training ensured that the project leader was abreast of current regulatory requirements and ethical considerations for involvement in research. The institutional review board (IRB) exemption processes for the University and the project site each required several multi-page documents supporting the need for the project, outlining its implementation plan, determining its eligibility as a QI project rather than a human research project, and excluding it from further IRB approval. After the project leader completed and submitted all required documentation, the University's DNP project director and the project site's research department formally reviewed the proposal. Formal approval of this DNP project as an IRB-exempt QI project was granted on September 26, 2022.

Section III. Project Design

Project Site and Population

The project site for this DNP project implementation is the MIH division serving the southeastern NC region of a multi-state, non-profit healthcare organization. The project site's main headquarters neighbors one of the organization's hospital campuses in coastal southeastern NC, though the MIH division has other physical locations throughout New Hanover, Brunswick, Columbus, and Onslow counties, allowing for expanded access to its services for patients throughout North and South Carolina (NHNHRMC, 2022c). This project's purpose is to benefit adult hospice patients aged 18 years or older, their caregivers, and MIH providers experiencing transitions from acute care settings, such as ICUs or EDs, to inpatient hospice care centers. Facilitators of this project's implementation include having access to a large patient population and working with a project team experienced with and passionate about research, data collection, EBP, education, and continuous QI. Anticipated barriers to successful implementation include potential scheduling challenges between members of the project team, communication challenges between the project team and various stakeholders, delays or errors in documentation by MIH providers leading to incomplete data collection, or missing patient encounters due to obstacles preventing transport prior to and outside of MIH team involvement.

Description of the Setting

The setting for this project is quite dynamic due to the nature of the MIH team's operations. The patient care setting specific to this project's implementation has multiple physical locations, changes throughout each patient encounter, and often differs significantly between encounters. For most transports provided to this project's population, patient care by the MIH team begins at a referring facility, such as a hospital's ICU or ED. It is less likely but possible that a patient encounter could originate from a surgical setting, such as an operating room (OR). Rarely, a patient may require a long-distance transport initiated by an outside transport team traveling by air; in that circumstance, the project site's MIH team will receive the patient at the local airport and complete the remainder of the transport to the hospice care center via a ground ambulance. All atypical transports during the project's implementation will be carefully considered on a case-by-case basis for data inclusion based on applying the predefined inclusion/exclusion criteria and will be disclosed with explanations in all pertinent areas of the project's reporting of results and outcomes. Once a patient is prepared for transport, they are moved to an MIH transport ambulance, where care continues until the unit arrives at the receiving facility and the MIH team transfers patient care to a hospice provider. The receiving facilities for this project are inpatient hospice care centers. The care centers that most frequently receive transfers from the project site are located within the same county as the project site and two of its neighboring counties. The MIH transport units utilized during this project are interfacility and critical care ambulances. Each unit is custom equipped as an "ICU on wheels" so that the MIH team can provide critical care level services as needed, including advanced airway placement and management, mechanical ventilation, non-invasive airway management, cardiac and invasive line monitoring, blood product administration, administration and titration of multiple infusions via medication pumps, monitoring and management of intracranial pressure, point-of-care lab testing, and monitoring and maintenance of intra-aortic balloon pumps (IABPs), among others. Additionally, each unit can safely and comfortably transport at least one accompanying support person with each hospice patient (NHNHRMC, 2022c, para. 1).

Description of the Patient Population

The population of the region the project site serves is growing at a rate higher than the national average. Having long been a popular travel destination and becoming one of the country's most desirable locations to live or retire to on the coast in recent years, the area is experiencing an influx of an aging population and also becoming more diverse (North Carolina Department of Health and Human Services, 2022; United States Census Bureau, 2021). As the region's only healthcare system offering comprehensive cardiovascular, pulmonary, neurology, trauma, oncology, and surgery services to its expanding population, an inevitable result is an increase in patients requiring care at the EOL. All of these factors co-occurring with an increased awareness of the benefits of hospice and expansion of healthcare coverage are increasing the demand for hospice services, including hospice transports (National Hospice and Palliative Care Organization, 2023). The patient population intended to benefit from the implementation of this project is adult hospice patients provided services by the project site's MIH system. Any patients

18 years or older who transfer from an acute care setting to a hospice care center by MIH transport teams will be included. No patients will be excluded based on any other factors, including but not limited to their race, nationality, ethnicity, sex, gender, sexual orientation, language, religion, cultural preferences, disability, financial status, or health condition.

Description of the Provider Population

While optimizing EOL care to benefit hospice patients is a core objective of this DNP project, it also endeavors to benefit the MIH providers delivering EOL care to that population. The team members of the MIH division who provide care to hospice patients during IFTs are a team of approximately 140 healthcare providers. The providers typically work in teams of two or three, with various combinations of EMTs, paramedics, and RNs. All providers are cross trained to provide the full spectrum of care offered by the MIH system within their scope of practice (SOP), including non-emergency, emergency, specialty, and critical care level transport services. Each provider's role and SOP is assigned according to their credentials and experience level. To lead the care of specialty or critical care level transports, providers must possess a state or national paramedic certification or RN license, three or more years of emergency or critical care experience, and at least one additional critical care transport-related certification, at a minimum. Of MIH providers in this division, 59 provide critical care level services via ground or air ambulance transports. The remaining 81 providers do not lead the care of specialty or critical care patients but serve as secondary providers during these encounters or may lead the care of lower acuity patients. The experience level of providers ranges from less than one year to 42 years, with a mean experience of 15.5 years (MIH Clinical Outcomes and Compliance Manager, personal communication, July 1, 2022).

Project Team

The project team comprises the project leader, university faculty members, several project site team members, and various other stakeholders. The project leader is the author of this report, a DNP student, and an MIH provider with a combined EMS and critical care nursing experience of 14 years. The project leader developed the intervention and is responsible for creating and executing the intervention's implementation plan. The project faculty members are the student's assigned project faculty and the project director for the DNP program; both support this project's completion through a continual loop of expert guidance and constructive feedback. The project site champion and primary team member at the project site is the MIH system's clinical outcomes and compliance manager. The project site champion provided opportunities for project completion at the project site, assisted in guiding the project's formal approval process through the site's research department, facilitated communication with stakeholders, aided in assistance with implementation at the project site, offers assistance with data collection and analysis strategies, and is serving as a mentor throughout the QI process. Both the CCT medical director and the EMS medical director for MIH are serving as important project site team members by sharing their expertise, reviewing the treatment protocol and education program, providing feedback throughout the completion of the project, and supporting the project's implementation by assisting with education dissemination and ensuring MIH compliance. Two hospice care providers from outside the project site support the QI initiative by providing expert advice and feedback on the content of the project's interventions. The program director, program manager, clinical coordinator, safety officer, education team, operations supervisors, and the support services team for MIH's critical care division are other project site team members. Each supports the project's completion by providing feedback on the project's interventions, disseminating information to MIH providers, and assisting with resource utilization throughout the implementation process. Last but not least, the project site's IRB coordinator communicated helpful information about the site's requirements and assisted with the site's QI project proposal and approval process.

Project Goals and Outcome Measures

The goal of this QI project is to optimize the comfort and safety of adult hospice patients, their caregivers, and MIH providers during transports between acute care settings and hospice care centers. To support this goal, specialized education and an evidence-based treatment protocol will be provided to MIH providers. Appendix C displays a copy of the hospice protocol draft. The measures pursued to determine the project's outcome will be patient comfort and safety in addition to MIH provider clinical confidence. Successful implementation of this project will potentially demonstrate an increase in patient comfort levels as a result of treatment protocol compliance and awareness of the patient population's unique needs by MIH providers, and improvements in MIH provider clinical confidence and comfort levels as a result of the knowledge acquired through the provided specialized training in combination with the guidance provided by the treatment protocol. Questions from the provider clinical knowledge assessments may be reviewed in Appendix D, and questions from the provider surveys can be reviewed in Appendix E.

Description of the Methods and Measurement

This project will be implemented based on IHI's PDSA model for healthcare QI. Implementation will include delivering the hospice protocol to staff by disseminating the hospice-focused education program through the primary online education platform utilized by the MIH system. With the release of the training program and the protocol beginning the project's 12-week implementation period, the first of three 1-month PDSA cycles will also begin (see Appendix F for a timeline of the entirety of the project and Appendix G for its implementation timeline). Data will be collected during each cycle to assess patient comfort, safety, and provider clinical competence. Before beginning the hospice training, each provider will complete a knowledge assessment focused on the care of hospice patients and complete a survey about their perceptions of caring for patients at the EOL. After completing the training session, each provider will repeat the knowledge assessment and survey. The provider pre- and post-assessment scores and survey results will be compared to measure the interventions' effects on their clinical knowledge and EOL care-related comfort levels. Patient comfort will be measured through chart reviews of comfort-related assessments documented on each patient's initial and final assessments and before and after any protocol-driven interventions. Comfort indicators will vary between patients but may include decreasing levels of common EOL complaints such as pain, anxiety, delirium, or dyspnea. Patients with indicators of improved comfort levels or actively receiving protocol-driven attempts to improve comfort levels prior to transferring their care to hospice care providers will be interpreted as having benefitted from the project's interventions. Patient safety will be measured by the presence or absence of any safety-related events, such as failure to secure the patient properly, unintentional injuries, or protocol deviations.

Discussion of the Data Collection Process

This project's patient data collection process began before implementation to gain a general understanding of the frequency and quality of pre-implementation hospice transports. After the training and protocol implementation, data collection for each eligible patient encounter will begin. Patient data collection will entail a review of patient care records in MIH's charting system to determine eligibility for inclusion in the project's data set on at least a biweekly basis. For each eligible patient, a unique identifier will be assigned. A code sheet matching the assigned identifier to the patient's chart number will be created and stored in a locked file cabinet drawer in the MIH Operational Supervisors' office at the project site to ensure patient privacy. The locked cabinet will only be accessible by the project leader and members of the MIH leadership team. Collected data will be entered for each patient under their assigned identifier code in an Excel spreadsheet. The data collection file will be stored on a computer with no other stored patient information. It will only be accessible by the project leader's biometric fingerprint scan or a dual-password entry. Patient transport information will be collected, including up to 30 data points per encounter. Each data point to be collected is displayed in the sample data collection tool provided in Appendix H.

MIH provider clinical competence data will be collected through the education platform's scoring reports to be generated after each provider's knowledge assessments are completed. Data about providers' self-perceptions of providing EOL will be collected through the survey program's online platform as survey responses are submitted. Since the project implementation will involve initiating a new treatment protocol, the project site's leadership team will require that the associated knowledge post-assessment be passed with a score of at least 80%. Each provider will receive a completion certificate upon passing the course (See Appendix I). Provider survey responses will be anonymized to promote the sharing of accurate responses. During each PDSA cycle, project team members will review the data collected about the project's interventions. PDSA cycle findings will be summarized and shared with project faculty throughout the project, primarily through synchronous meetings and a series of project report documents.

Implementation Plan

Implementation of this QI project will begin with preparing the MIH team for the execution of a new patient treatment protocol through site communication and the distribution of a specialized training module dedicated to providing care to hospice patients at the EOL. The training module will be uploaded to the primary education platform used by the MIH team, which is accessible online through computers and mobile devices. Before beginning the training module, providers will complete both a knowledge assessment and a survey. These tasks intend to establish each provider's baseline clinical knowledge of and personal comfort level with providing EOL care. Next, viewing the 45-minute pre-recorded narrated presentation will be required. Once the presentation has been viewed, the clinical knowledge assessment and post-survey link will become available. If a provider passes the post-assessment with a score of 80% or better within three attempts, their education profile will log the course as completed, and they will be released to apply the interventions it contains within their SOP. If a score of 80% is not achieved after the third attempt, the provider will be required to review the presentation again before being allowed additional assessment attempts. During each PDSA cycle, the project team will review the data collected about the project's interventions. As long as no safety concerns or protocol deviations are identified and patient comfort is prioritized, the next cycle will continue without any change. If protocol deviations or safety concerns are identified, further review will be performed to determine the cause. If the problem is potentially reproducible across the team, for instance, due to an error in the protocol perceived by multiple staff, then the project team will correct the error with a revised protocol in the next cycle. Alternatively, if an issue seems unique to a particular provider's decision-making or an unusual circumstance, the transport will be more closely reviewed by the clinical compliance team to determine the root cause. If an unjustified protocol deviation or safety event occurs, the site's compliance team will follow the standard process for those circumstances. Any implementation plan or intervention updates will be reviewed and approved as necessary by the project leader, project site champion, CCT medical director, and project faculty prior to dissemination to MIH providers.

Timeline

This DNP project began several months prior to when it will be implemented. From the planning stage, which began during the first of four DNP project courses, to delivering the final project presentation to the DNP program faculty and project site leadership during the final course, more than one year will be dedicated to completing this project. From May 2022 through July 2022, the project leader collaborated with the project faculty and the project site champion to confirm the project site's partnership and determine the project's focus. Once the project team agreed upon the project focus, the literature review process began. Also, during that period, the project leader began the approval process required by the University and the project site and completed all necessary training to maintain compliance with the university's and project site's research departments. From August 2022 through October 2022, meetings took place between the project leader and project faculty and between the project leader and project champion to finalize the project plan and complete the formal project approval review process. A formal project approval request was sent to the project site champion for review on September 24, 2022. The DNP project faculty and project director reviewed and approved the project's plan on September 26, 2022. The project site champion reviewed and submitted the formal request to the site's IRB coordinator on October 6, 2022. The IRB coordinator approved the project as a QI project on October 19, 2022. From November 2022 to July 2023, the project's goals and implementation plan were refined through continued collaboration, stakeholder feedback, and evidence in the literature. The treatment protocol and related education materials were drafted and revised throughout this timeframe. A protocol draft was submitted for review and approval from the project site champion, MIH's medical directors, and participating stakeholders in July 2023. Once the protocol is revised based on feedback from the project team, the final protocol draft will be approved for implementation, and the training session requirements will be shared with the MIH's team of providers.

Implementation will begin on July 10, 2023, with both the training module available for completion and the treatment protocol accessible for use during hospice transfers. This date will be designated as the start of the first PDSA cycle. The first cycle will be completed four weeks later, on August 6, 2023. The second cycle starts on August 7, 2023, and will continue through September 3, 2023, and the final cycle from September 4, 2023, through October 1, 2023. Final data collection of any remaining data and a final review by the project leader and project site champion may occur until October 9, 2023. MIH documentation is occasionally delayed up to one week, and it is imperative to include all relevant data for accurate analysis and representation of findings. A comprehensive data analysis, interpretation of findings, and project outcomes will be shared through the project's poster presentation event to the University on November 16, 2023.

Section IV. Results and Findings

Results

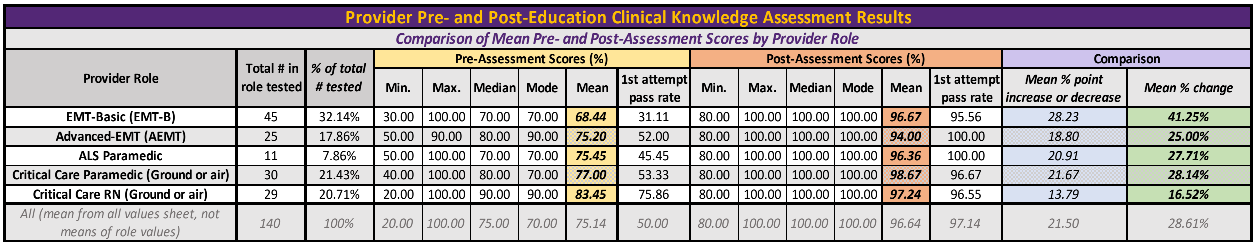
Patient encounters

One hundred eighty-one patients meeting the inclusion criteria were transported over the 12-week implementation period. By the time of patient transfer to hospice providers at a receiving facility, 178 out of the 181 patient transport records documented one of the following indicators of compliance with the comfort-focused hospice protocol: improvement after intervention(s) for any expressed or observed pain, anxiety or agitation, dyspnea, or other specified complaint; attempts to alleviate any of the previously described complaints through use of appropriate intervention(s) allowed within the provider's SOP and transport duration, if a complaint was present and did not improve; a thorough assessment was performed, but revealed no new or worsened complaints requiring intervention(s); or, an intervention was indicated for an identified complaint, but was refused by the patient or decision-maker. Two patients did not arrive at the hospice care center with documented evidence of improved comfort, receiving attempts to improve comfort, or an absence of complaints. One of the patients was experiencing pain and received no documented intervention. However, it was later revealed in a verbal discussion with the MIH provider that intervention by the MIH provider was not provided because the referring facility's staff had recently administered an intervention and that repeating the intervention was beyond the MIH provider's SOP. Nevertheless, the provider did not want to refuse or delay the transport to request additional assistance from the referring facility. The other did not have a specific complaint documented, but their assessment revealed signs consistent with one or more complaints and received no documented interventions. One patient's record was not documented thoroughly, and evidence of an absence or improvement in complaints could not be determined. All patient records documented at least the minimum patient and provider safety assessments and interventions required by this MIH system. No patient or provider safety events or concerns were documented or identified throughout implementation.

Provider clinical competency

All 140 transport providers from the MIH team regularly providing interfacility transports of hospice patients for the organization completed the specialized education program. The first attempt pass rate for the clinical knowledge pre-assessment was 50%. The pre-assessment scores ranged from 20% to 100%, and the most frequently achieved pre-assessment score was 70%. The average score for the clinical knowledge pre-assessment was 75.14%. After completing the education module, the first attempt pass rate for the clinical knowledge post-assessment was 97.14%. Four providers required an additional attempt to pass the post-assessment with a score of 80% or better, but no providers required more than two attempts. The post-assessment scores ranged from 80% to 100%, and the most frequently achieved post-assessment score was 100%. The average clinical knowledge post-assessment score was 96.64%. Table 1 shows the pre-assessment and post-assessment score values categorized by each level of provider role. Individual provider clinical compliance with the provided hospice patient treatment protocol after successful completion of the education program ranged from 0% to 100% but averaged 98.34% across all completed transports.

Table 1



Provider Pre- and Post-Education Clinical Knowledge Assessment Results

Comparison of Mean Pre- and Post-Assessment Scores by Provider Role

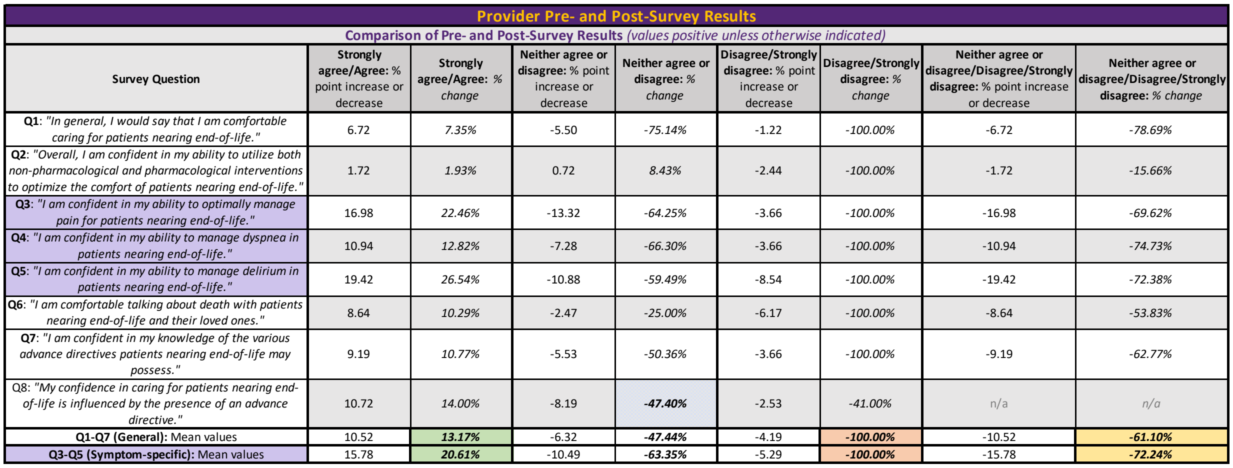
Provider Role	Total # in role tested	*% of total # tested*	Pre-Assessment Scores (%)						Post-Assessment Scores (%)						Comparison	
			Min.	Max.	Median	Mode	Mean	1st attempt pass rate	Min.	Max.	Median	Mode	Mean	1st attempt pass rate	*Mean % point increase or decrease*	*Mean % change*
EMT-Basic (EMT-B)	45	32.14%	30.00	100.00	70.00	70.00	***68.44***	31.11	80.00	100.00	100.00	100.00	***96.67***	95.56	*28.23*	***41.25%***
Advanced-EMT (AEMT)	25	17.86%	50.00	90.00	80.00	90.00	***75.20***	52.00	80.00	100.00	100.00	100.00	***94.00***	100.00	*18.80*	***25.00%***
ALS Paramedic	11	7.86%	50.00	100.00	70.00	70.00	***75.45***	45.45	80.00	100.00	100.00	100.00	***96.36***	100.00	*20.91*	***27.71%***
Critical Care Paramedic (Ground or air)	30	21.43%	40.00	100.00	80.00	70.00	***77.00***	53.33	80.00	100.00	100.00	100.00	***98.67***	96.67	*21.67*	***28.14%***
Critical Care RN (Ground or air)	29	20.71%	20.00	100.00	90.00	90.00	***83.45***	75.86	80.00	100.00	100.00	100.00	***97.24***	96.55	*13.79*	***16.52%***
All (mean from all values sheet, not means of role values)	*140*	*100%*	*20.00*	*100.00*	*75.00*	*70.00*	*75.14*	*50.00*	*80.00*	*100.00*	*100.00*	*100.00*	*96.64*	*97.14*	*21.50*	*28.61%*

Provider comfort

In total, 82 MIH providers submitted completed pre-education surveys, and 55 submitted completed post-education surveys. The pre-surveys revealed that 16.5% of MIH providers reported feeling uncomfortable with providing EOL in general and that 21.95% reported that they were not confident in their ability to manage common EOL symptoms. Management of delirium, management of pain, and communicating with patients or loved ones about EOL were topics with the greatest percentage of negative responses. Almost 27% of providers reported a lack of confidence in their ability to manage delirium and 24.39% in their ability to manage pain; 16.05% were not comfortable communicating with patients and loved ones about EOL. Before completing the education program, 14.64% of providers were not confident in their knowledge of advance directives (ADs), and 17.28% were unsure if the presence of an AD influenced their confidence in caring for patients nearing EOL.

After completing the education program, post-survey results revealed that 93.93% of MIH providers were comfortable, 6.07% were unsure of their comfort level, and none reported being uncomfortable with providing EOL care in general. Almost 94% of providers reported confidence in their ability to manage common EOL symptoms, and 6.17% were unsure of their confidence level. However, no providers reported a lack of confidence in managing the common EOL symptoms post-survey. The topics with the greatest percentage of negative responses in the pre-survey (delirium management, pain management, and EOL communication) resulted in 92.59% of providers reporting confidence in or comfort with the respective topic and 7.41% reporting they were unsure. No providers reported discomfort or a lack of confidence in any topic after they completed the education program. Almost 95% of providers were confident in their knowledge of ADs, and 9.09% remained unsure if their confidence in caring for patients nearing EOL was influenced by the presence of an AD after the education program. Table 2 compares the pre-survey and post-survey results for each of the eight questions.

Table 2



Provider Pre- and Post-Survey Results

Comparison of Pre- and Post-Survey Results *(values positive unless otherwise indicated)*

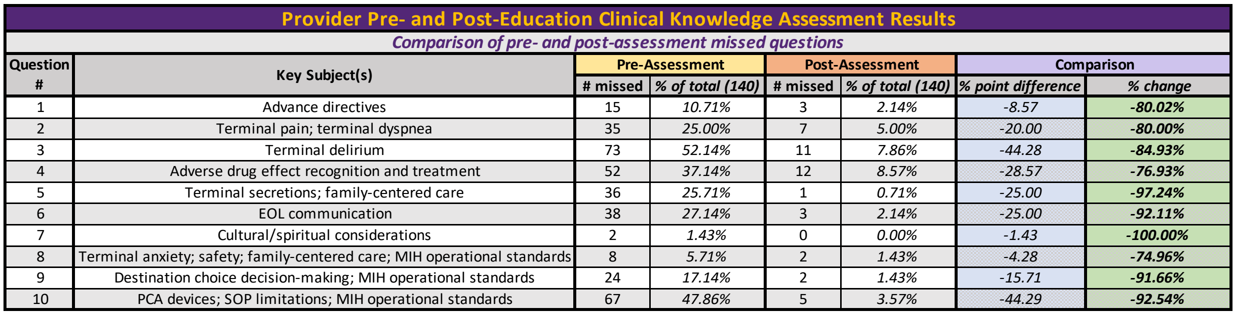
Survey Question	**Strongly agree/Agree:** % point increase or decrease	**Strongly agree/Agree:** *% change*	**Neither agree or disagree:** % point increase or decrease	**Neither agree or disagree:** *% change*	**Disagree/Strongly disagree:** % point increase or decrease	**Disagree/Strongly disagree:** *% change*	**Neither agree or disagree/Disagree/Strongly disagree:** % point increase or decrease	**Neither agree or disagree/Disagree/Strongly disagree:** *% change*
Q1: *"In general, I would say that I am comfortable caring for patients nearing end-of-life."*	6.72	*7.35%*	-5.50	*-75.14%*	-1.22	*-100.00%*	-6.72	*-78.69%*
Q2: *"Overall, I am confident in my ability to utilize both non-pharmacological and pharmacological interventions to optimize the comfort of patients nearing end-of-life."*	1.72	*1.93%*	0.72	*8.43%*	-2.44	*-100.00%*	-1.72	*-15.66%*
Q3: *"I am confident in my ability to optimally manage pain for patients nearing end-of-life."*	16.98	*22.46%*	-13.32	*-64.25%*	-3.66	*-100.00%*	-16.98	*-69.62%*
Q4: *"I am confident in my ability to manage dyspnea in patients nearing end-of-life."*	10.94	*12.82%*	-7.28	*-66.30%*	-3.66	*-100.00%*	-10.94	*-74.73%*
Q5: *"I am confident in my ability to manage delirium in patients nearing end-of-life."*	19.42	*26.54%*	-10.88	*-59.49%*	-8.54	*-100.00%*	-19.42	*-72.38%*
Q6: *"I am comfortable talking about death with patients nearing end-of-life and their loved ones."*	8.64	*10.29%*	-2.47	*-25.00%*	-6.17	*-100.00%*	-8.64	*-53.83%*
Q7: *"I am confident in my knowledge of the various advance directives patients nearing end-of-life may possess."*	9.19	*10.77%*	-5.53	*-50.36%*	-3.66	*-100.00%*	-9.19	*-62.77%*
Q8: *"My confidence in caring for patients nearing end-of-life is influenced by the presence of an advance directive."*	10.72	*14.00%*	-8.19	***-47.40%***	-2.53	*-41.00%*	n/a	*n/a*
Q1-Q7 (General): Mean values	10.52	***13.17%***	-6.32	***-47.44%***	-4.19	***-100.00%***	-10.52	***-61.10%***
Q3-Q5 (Symptom-specific): Mean values	15.78	***20.61%***	-10.49	***-63.35%***	-5.29	***-100.00%***	-15.78	***-72.24%***

Discussion of Major Findings

There were several significant findings after all data had been collected and analyzed. Most importantly, no patient or provider safety events or concerns were reported throughout this project's implementation. The average clinical knowledge assessment scores for each provider role group increased after completion of the education module by a range of 16.52% to 41.25%, and the average clinical knowledge assessment score for the entire 140-provider group increased by 37.66% to an average post-assessment score of 96.64%. Across all ten assessment questions, there were improvements in the number of correct responses, and no post-assessment question achieved less than a 74.96% decrease in its percentage of incorrect responses when compared with the same question's percent of pre-assessment incorrect responses. As shown in Table 3, the key subjects with the most significant improvement in missed responses after completing the education included management of terminal secretions, family-centered care considerations, management of terminal delirium, SOP limitations of patient-controlled analgesia (PCA) pump use by MIH providers, and MIH operational standards.

A paired samples *t*-test was performed to evaluate whether there was a difference between the providers' pre- and post-education knowledge assessment scores (see Appendix N). The results indicated that the providers' post-education knowledge assessment scores (*M* = [96.64], *SD* = [6.19]) were significantly higher than the providers' pre-education knowledge assessment scores (*M* = [75.14], *SD* = [16.20]), *t*([139]) = [14.47], *p* = [<.001]. As it is not possible to definitively rule out other variables that may have influenced the scores, it cannot be determined that the education program was the sole influence of improved scores; however, given that the scores were obtained just prior to and immediately following the completion of the education program, it is plausible that the program had at least some positive influence on providers' levels of clinical knowledge.

Table 3



Provider Pre- and Post-Education Clinical Knowledge Assessment Results

Comparison of pre- and post-assessment missed questions

Question #	**Key Subject(s)**	**Pre-Assessment**		**Post-Assessment**		**Comparison**	
		# missed	***% of total (140)***	**# missed**	***% of total (140)***	***% point difference***	***% change***
1	Advance directives	15	*10.71%*	3	*2.14%*	*-8.57*	***-80.02%***
2	Terminal pain; terminal dyspnea	35	*25.00%*	7	*5.00%*	*-20.00*	***-80.00%***
3	Terminal delirium	73	*52.14%*	11	*7.86%*	*-44.28*	***-84.93%***
4	Adverse drug effect recognition and treatment	52	*37.14%*	12	*8.57%*	*-28.57*	***-76.93%***
5	Terminal secretions; family-centered care	36	*25.71%*	1	*0.71%*	*-25.00*	***-97.24%***
6	EOL communication	38	*27.14%*	3	*2.14%*	*-25.00*	***-92.11%***
7	Cultural/spiritual considerations	2	*1.43%*	0	*0.00%*	*-1.43*	***-100.00%***
8	Terminal anxiety; safety; family-centered care; MIH operational standards	8	*5.71%*	2	*1.43%*	*-4.28*	***-74.96%***
9	Destination choice decision-making; MIH operational standards	24	*17.14%*	2	*1.43%*	*-15.71*	***-91.66%***
10	PCA devices; SOP limitations; MIH operational standards	67	*47.86%*	5	*3.57%*	*-44.29*	***-92.54%***

When compared to pre-survey responses, post-survey responses were improved in all of the subject areas presented, which included overall comfort levels with EOL care, comfort levels with patient and family EOL communication, confidence in the ability to optimize comfort through utilization of both pharmacologic and nonpharmacologic interventions, confidence in managing specific, common EOL-related symptoms such as pain, dyspnea, and delirium, and confidence in knowledge of various advance directives and their application to transport. Post-survey results revealed that the percentage of providers who were comfortable with EOL care in general increased by 13.17%, and the percentage of providers who reported confidence in their ability to manage common EOL symptoms increased by 20.61% after completing the education program. There was also a 26.54% increase in providers reporting confidence in their ability to manage delirium, a 22.46% increase in providers reporting confidence in their ability to manage pain, and a 10.29% increase in providers reporting comfort with EOL communication in the post-survey responses when compared to the pre-survey responses. The percentage of providers who reported confidence in their knowledge of ADs increased by 10.77%, and the percentage of providers who reported uncertainty about the influence the presence of an AD would have on their confidence in providing EOL decreased by 47.4% when pre-survey and post-survey responses were compared.

Prior to the implementation of the project's interventions, hospice patients may have received care that had not been optimally tailored to their specific needs, and they were receiving it from providers apprehensive of their abilities to administer such care, citing knowledge gaps and a lack of available clinical guidance as their most limiting contributing factors. This project set out to improve the quality of care for patients and the experiences of those involved in EOL care to the maximum extent possible, regardless of whether the concerns from this highly skilled team of MIH providers about their limitations were real or perceived. The pre-and post-assessments and surveys aimed to measure the interventions' effect to determine whether they served their intended purpose in positively affecting providers' clinical knowledge or self-perceptions. However, it was through reviewing the information provided by their results and responses that it became evident that a significant knowledge gap had been present and apparent that the concerns prompting the birth of this QI project were not just perceptions of a few providers but realities shared by many of them.

Unfortunately, a patient control group studied before implementation to compare the group of patients cared for after implementation was not a feasible option due to the uncertainty of the ability of the groups to be accurately compared as several variations in patient documentation, provider role delineations, and organizational policies and procedures had occurred leading up to the start of implementation. As a result, it is also impossible to conclude that the interventions were solely responsible for the observed patient outcomes. However, the literature that guided the development of the project's interventions supports the possibility that an increase in clinical knowledge and availability of improved clinical guidance had a positive effect on greater than 98% of hospice patients who experienced improved comfort levels (or no new or worsened complaints), especially when a knowledge gap and lack of clinical guidance had been identified as barriers to providing optimal care previously.

Section V. Interpretation and Implications

Costs and Resource Management

Overall, this project resulted in a very low financial burden. Since implementing its interventions was done utilizing resources such as existing clinical communication tools, an established education platform, and medical equipment and supplies already available and in use by providers at the project site, there were no additional costs related to those items. The highest financial cost to the project site was time paid to MIH providers who completed their training outside of their regularly scheduled shifts. The project leader personally funded other resources, tools, and supplies required for researching, planning, and implementing the project's interventions. These costs included a paid subscription to deliver and collect survey responses, and producing easy-reference badge reel cards for providers. Specific costs can be reviewed in more detail in Appendix O.

The most significant expenditure in implementing this project was the investment in time by the project leader, project site champion, project faculty, other project site stakeholders, and MIH providers. As the project leader led the project implementation as a student of the University rather than an employee of the project site, no related financial expense was placed on the project site for the project leader's time or efforts. The project site champion is a salaried employee with responsibilities that include leading QI projects, managing clinical and educational compliance, and providing continuing education for the MIH team. Since he would have had to address this problem at the project site regardless of the project leader's initiative, his participation did not directly result in additional financial costs to the project site. However, it is essential to bring attention to the fact that such a lack of additional monetary spending by the project site for the time the project site champion devoted to this project should not be misinterpreted to represent the value of his investment, as his experience and willingness to support this project's completion was invaluable. It is impossible to assign an accurate dollar amount to the extent that additional time spent by the project site champion collaborating with the project leader was or was not offset by having reduced the time the project would have required of him in the absence of the project leader's efforts. However, there were significant savings to the site by allowing the project to be led by this University student compared to paying one or more employees to assist the project site champion for the more than 500 hours required for its completion.

If this project leader had been paid at the average hourly rate of an advanced practice provider in the project site's state for the 500 hours spent on this project, and the project site had funded all additional supplies and resources utilized throughout its implementation, estimated expenses could have totaled approximately $35,000. At the average reimbursement rate for acute or critical care transports, that total cost is less than 12 transports, which is only 1% of the number of hospice transports this MIH team completed in 2022. Finding translatable data with which to assign a dollar amount to the effects of these patient outcomes and experiences was even more challenging than uncovering resources for developing this project, likely due to some of the same reasons related to the extent of this population's uniqueness and this care setting's variability. The monetary expense to the project site ultimately totaled less than $6,000, an amount equaling the average reimbursement for just a few transports depending on the care level required and payor source; an amount that seems minuscule compared to its value in improving outcomes for all involved in EOL transitions. It is also important to note that, even in the absence of this DNP project, additional hospice education would have been inevitable due to a combination of the previously discussed reasons that prompted this project and forthcoming increased EMS education standards requirements for inclusion in initial and continuing EMS education.

If implemented on a larger scale or at a site where paid employees are responsible for all aspects of project implementation, the potential for higher financial costs should be considered. Again, the most substantial financial cost would be the time paid to non-salaried employees to complete the required education if it was not completed within a regularly scheduled work period. Approximately 90 minutes are required to complete the pre-survey and pre-assessment, view the educational presentation, and then complete the post-assessment and post-survey. So, for each hourly-paid employee, it should be expected that 1.5 hours of additional hourly pay would be accrued if a similar education program was implemented. This project's design, results, and lessons are shared in this paper and are available for use as a resource for future initiatives. The depth of information this paper provides could significantly reduce the time required to replicate this project within other teams of professionals, thus decreasing associated costs directly proportional to the amount of time spent implementing it.

Implications of the Findings

As previously described, there are multiple negative consequences suffered by patients, their loved ones, and providers proven to result from inadequate relief of suffering and failing to meet the EOL desires of dying patients. The deployment of the evidence-based protocol and hospice training positively impacted MIH providers' clinical knowledge and perceptions of their ability to provide EOL. Studying the effects of the project's interventions reinforced that the project site's MIH teams are capable of identifying certain limitations in their practice. They are also capable of effectively managing EOL symptoms and successfully delivering hospice patients to their most appropriate desired setting to die, even for those presenting with complexities that would have rendered them ineligible for discharge and transport to free-standing hospice care centers in the past.

As a result of this project, MIH providers were better prepared to recognize and treat the various needs of hospice patients. They were more equipped with the knowledge to enhance their ability to communicate with a diverse range of individuals at the EOL. For patients, receiving care designed through evidence-based clinical improvement processes leads to further advancements in the quality of their care. Promoting diversity and inclusivity in healthcare is imperative to achieving health equity for all. The project's interventions were designed with careful consideration of and additional attention to non-majority populations because they are increasing, and diversity in patient-provider encounters will continue to rise. Minority populations are underrepresented in hospice research, but efforts are underway to improve that. Recent research studying hospice and minority populations revealed that minority populations disproportionately miss out on hospice benefits due to a lack of understanding of what hospice is and how its services are provided. There is also evidence that minority populations have reservations about enrolling in hospice due to perceptions that their beliefs, lifestyles, or other cultural aspects would not be respected or honored by hospice services (Wondafrash, 2020). Increasing efforts to support diversity and inclusion as an integral part of implementing new or changed processes requires continued attention until such considerations become universal and automatic. This project led to noticing other areas at the project site that could benefit from increased attention to diversity and inclusivity. As a result, a recommendation to require such considerations with all new and updated clinical protocols, procedures, or policies within the site's MIH team moving forward was proposed to the project site.

Other information was acquired by analyzing the team's response to the project through provider clinical documentation and feedback. Within the first implementation cycle, one of the MIH teams was dispatched to transport a terminal child from the project site's ED for admission to an inpatient palliative care unit in a hospital over two hours away. The length of transport time and distance traveled away from the patient's home required to ensure the patient arrived at an appropriate facility to meet their physical needs prompted questions about the benefits of specialized care for this patient and their family when weighed against the challenges created by a lengthy transport and the distance from home and supportive extended family. With the attention to the lack of availability and capability of local resources to serve this population and how the MIH team may be affected by these dynamics, some providers requested pediatric-focused palliative care education.

Another significant result of this project was that it brought attention to how the area's population and the healthcare landscape will continue to evolve. Some providers questioned the potential for a specialty MIH palliative care team in the future. Several providers reported that the education provided much-needed perspectives on why the changes presented were necessary now and for the future, which they appreciated. Lastly, the project leader implemented this project at a site where she had been employed for many years while continuously progressing through different roles and completing an advanced degree. Doing so sparked an interest in returning to achieve a higher level of education for some within the MIH team, as several of them have initiated extensive conversations about various degree and program types and opportunities for professional growth and advancement. For those reasons, it is believed that this project not only served its intended purpose in helping solve the problem identified by the project site but also inspired other positive changes in providers and uncovered potential opportunities for the MIH system to continue its expansion of its benefits to its community.

Sustainability

The project faculty and site champion have encouraged further dissemination of this project's plan and findings across other MIH systems to promote improvements in the quality of EOL care. The MIH system has also added the education program to its new hire orientation curriculum, including the pre-assessment, presentation, and post-assessment portions. Additionally, with an annual review of MIH education components by its education team, the program will be reviewed for any potential need for its content to be updated. It will assign any updates to be completed by a member of its education team, as it does for all other education in its curriculum. With projections of hospice transports increasing and the populations requiring hospice services becoming more diverse, there is potential for adaptation of the interventions from this project to meet the needs of other specialty populations served by the MIH team, such as pediatric patients, sooner rather than later.

Dissemination Plan

After realizing how small the body of applicable, quality resources was while developing this project and how unique the project site's capabilities and goals were for this patient population, it became clear that sharing this project and its findings was necessary to help increase the availability of information available about medical transport and to promote the broadening of MIH provider capabilities, hospice patient benefit utilization, inclusivity and diversity in MIH and hospice settings, and improved outcomes for all involved in EOL care. The project and its findings will be shared with university faculty through a poster presentation at the University's College of Nursing campus on November 16, 2023 (See Appendix P for project poster). By December 2023, the final project paper will be submitted to the University's archive for scholarly works as required by the University's DNP program. A manuscript will be submitted to *Air Medical Journal,* the leading medical transport publication in the country, because it was agreed by the project leader and project site champion that the MIH team of EMS and nursing providers who were most impacted by the project are both represented by this publication, as it focuses on the full spectrum of providers that comprise the transport industry, compared to other publications which only represent either EMS or nursing. Additionally, per the request of the project site champion, the project leader plans to present the project's findings at the project site's nursing research symposium, which is being organized for early 2024.

Section VI. Conclusion

Limitations and Facilitators

The conclusion of the project's implementation period recognized various limitations and facilitators. While creativity and flexibility were fundamental to overcoming the challenges presented by the literature review and the effects of its results on developing the project's interventions during the pre-implementation phase, which were described earlier in this paper, it was maintaining flexibility and perseverance that were imperative to ultimately accomplish all that was required to transition into and through completion of the project's implementation period. Not unexpectedly, there were several small barriers to overcome. Occasional rescheduling of meeting times or formats to accommodate several project team members' busy schedules and working around internet outages or technical difficulties such as computer repairs are some examples of minor limitations that ultimately resulted in minimal to no difficulties to overall project progression. Unfortunately, a few unexpected and more significant limitations did impede the completion of the project by the initial target timeframe.

The most impactful setback was due to the project leader experiencing unforeseen personal illness and family events necessitating temporary reallocations of personal resources following project approval but prior to its implementation. During the delay and as the implementation plan was being updated, multiple organizational and departmental changes occurred at the project site. For example, there were numerous organizational structure, policy, and procedure changes within the project site at departmental and organizational levels. Project site-based email addresses changed, and new policies for using the project site's colors, logos, and distribution of items displaying them were implemented. Soon after, the MIH system logo was also redesigned. With many changes occurring and the project leader outside the organizational communication chain, keeping current with updates outside project site champion meetings took more time and effort than initially anticipated. These factors created confusion and required several protocol and education presentation revisions before their distribution.

To ensure the highest quality of the project's interventions, exhaustive attempts were made to include the expertise of local hospice or palliative care specialists during their development. Multiple phone and email attempts to connect with several hospice or palliative care specialists affiliated with the project site had failed during the planning period. Attempts to contact the medical director for one of the local hospice care centers, who was familiar with the MIH team, also failed. At a project site meeting just prior to the revised implementation start date, the project site champion shared that he had recently been made aware of changes within the site's palliative care services by an inpatient acute care liaison for the project site. It was determined that the website providing contact information had not yet been updated, which was discovered to be the cause for some of the communication barriers previously encountered. The liaison provided updated contact information for the new chief medical officer (CMO) of a nearby hospice care center, whom the project site champion and project leader later realized had replaced the medical director they had failed to reach previously, as he had retired. The CMO was immediately helpful in connecting the project leader with a hospice care center's clinical team member to review and provide feedback on the treatment protocol and education presentation. Unfortunately, after initially responding to the CMO's request and agreeing to meet the project leader for further discussion, the project leader did not receive any additional responses to attempts to schedule the offered meeting. The project leader, university faculty, and site champion agreed that there was significant value in the involvement of such stakeholders. However, the decision was made to continue without the desired input to prevent further delays in project implementation.

After implementation began, there was a delay in completing the training module for some MIH team members and consequently receiving the related data due to several reasons independent of any variables directly related to this project. Reasons for delays experienced throughout the implementation period included increased transport volumes and associated responsibilities taking priority during shifts, internet connectivity issues, a tropical storm, several team members taking personal time off during the implementation period, and the addition of new hires and departing of team members transitioning through the system.

The education platform utilized for the education program was an excellent tool for disseminating the presentation and clinical knowledge assessments because of its familiarity and ease of use for MIH providers. At the end of the first PDSA cycle, it was discovered that some of the provider surveys, especially the post-surveys, had not been completed. The limitation was inadvertently overlooked initially, as a staggering of provider completion times to be expected. However, the number of survey responses did not mirror the number of course completions as the deadline passed, and the project leader and project site champion realized then that an error had occurred. Unfortunately, despite the program including completion checkpoints designed to prevent course progression without the completion of required tasks embedded in its formatting, an error in the platform still allowed course completion without completing the surveys. The number of responses did improve by communicating requests to complete the surveys to providers via emails and shift huddles, but by the close of the cycle, only 82 fully completed pre-surveys and only 55 fully completed post-surveys out of a potential 140 responses each were recorded. Consequently, the amount of data collected from the surveys diminished, and it became more difficult to compare the survey results. Because there were different numbers of responses in each group, the pre-and post-responses were unable to be definitively matched as intended in the project's design.

Facilitators throughout the progression of this project were just as dynamic and influential as the limitations described, but in a more positive way. The support the project site stakeholders provided was not just significant; it allowed this project to come to fruition. The entire site's leadership team was happy to allow the project to be implemented there and even provided several opportunities to choose from when selecting a project focus. The project site champion was the primary point of contact throughout the project and one of the project's significant facilitators, sharing his expertise from years of research involvement experience and assisting with navigating the site's IRB requirements and exemption process for QI projects. He also helped collect data from provider clinical knowledge assessments, communicated reminders and updates related to the project to MIH providers, and provided suggestions for disseminating the project's findings. The project faculty and the project director provided continuous expert guidance, constructive feedback, and support to the project leader through multiple project meetings and course activities. Additional facilitators included an advanced practice registered nurse (APRN) working as a hospice provider and a master's-prepared RN with hospice care and transport experience. Each provided review and feedback on the project's interventions, which was an invaluable alternative to missing out on other hospice stakeholders' involvement.

Recommendations for Others

Replicating this project could be done by any transport team following the process outlined in this paper and making adjustments to individualize its interventions to meet its population's needs and the requirements outlined by each state for the level of care its team provides. Involving specialized hospice or palliative care experts in project planning and implementation could further improve its interventions and their ability to drive positive outcomes.

Recommendations for Further Study

High-quality research is crucial for elevating the evidence available to support these areas in their necessary and inevitable growth, yet its availability for MIH systems and EOL care, both independent of each other and together, is scarce. Further study within MIH systems and hospice care could significantly impact the quality of patient care and the experience of providers and others involved in caring for dying patients. The increased frequency of transports occurring during this project's implementation has led to more collaborative efforts by the project site's MIH team, acute care departments, case managers, and the local hospice care centers to complete these transports. Discussions about the potential for providing transports to patient homes for withdrawal of care to be provided there under select circumstances have occurred, and the project leader has shared information obtained during her literature review describing the success of such endeavors in other programs. Piloting such a service would be another opportunity to positively impact patients directly in the project site's community through the expanded availability of EOL care options and other patients indirectly by studying those encounters and sharing what is learned from them. Lastly, high-fidelity training simulations could be developed using virtual reality (VR) technology to improve hospice-related training soon, as the project site recently acquired VR equipment for use in its training department. The excitement of the new technology arriving during this project's implementation increased interest by the MIH leadership team in developing palliative care-focused VR simulations to include in its comprehensive continuing education collection, yet another opportunity to share lessons learned through experience.

Final Thoughts

With the dawn of the COVID-19 pandemic, resource allocation and utilization rapidly emerged as significant barriers to delivering optimal patient care across almost all health settings. As healthcare systems made efforts to improve the efficient use of resources, a leading health system in southeastern NC strived to increase its accessibility to patients requiring life-saving care by facilitating more timely and appropriate transfers of hospice patients from its acute care settings to more desirable ones. The increasing frequency and complexity of the transport requests led to MIH providers expressing concerns about their ability to provide quality EOL care. Such a vulnerability, as applied to this unique group of individuals, may have been exacerbated by an implicit notion that EOL care was counter to their purpose as life-saving providers. Further investigation revealed that despite these providers' tremendous capabilities in caring for critically ill and injured patients, several felt ill-equipped to provide EOL care due to a lack of available clinical guidance and population-specific expertise. Over 12 weeks, this DNP-driven QI project sought to expand the capabilities of MIH providers in optimizing the comfort of hospice patients requiring transport to hospice care centers by providing evidence-based clinical guidance. Through implementing a hospice-focused education program and a novel hospice patient treatment protocol, providers reported improved comfort levels in caring for dying patients, displayed clinical competence improvements, and proved capable of adequately managing EOL care of high-complexity patients during transports between acute care settings and hospice care centers. It is the hope of this DNP project leader that with the conclusion of this project, the providers involved in it have experienced a renewed sense of awareness of their purpose as healthcare providers, that they remain dedicated to personal and professional growth, and that they strive to remain open-minded and embrace the changes on the horizon required to benefit their patients and themselves. Above all else, each must realize that optimizing the experience of an inevitable death is as important as saving a life, and as MIH providers, they are among the few who have the privilege and capability to do both.

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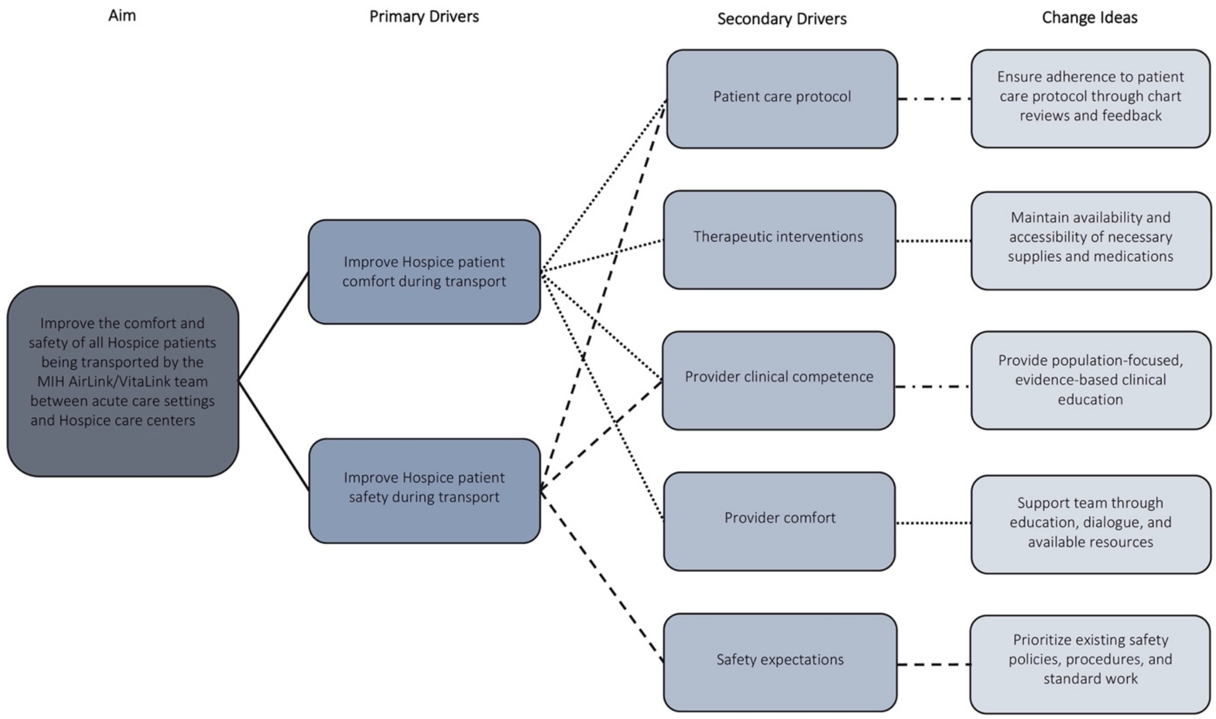
Appendix A

Literature Review Matrix

Authors	Year Pub	Article Title	Theory	Journal	Purpose and take home message	Design/Analysis/Level of Evidence	IV DV or Themes concepts and categories	Instr. Used	Sample Size	Sample method	Subject Charac.	Comments/critique of the article/methods GAPS
Clemency et al.	2019	Transport Home and Terminal Extubation by Emergency Medical Services: An Example of Innovation in End-of-Life Care	N/A	*Journal of Pain and Symptom Management*	Invasive measures should not prevent discharge from the acute care setting to the patient/family's preferred destination. Interdisciplinary teams are capable of working together to meet the wishes of patients and their families at the EOL up to and including withdrawal of life-sustaining measures outside of healthcare facilities.	Descriptive case report, Level VI	Themes included provider scope expansion, interdisciplinary teamwork, and patient-centered care coordination.	N/A	1 patient, family, and interdisciplinary care team unit	Case study	Young adult patient with HIV suffering from respiratory failure being cared for by team of EMS providers, outpatient hospice providers, an EMS medical director, and inpatient acute care providers.	This was a single case with unique enabling circumstances not always readily available or accesible in other EOL patient care scenarios.
Fitzpatrick et al.	2022	Improving Hospice and Palliative Care Through Nurse Practitioner Engagement in a Community Paramedicine Program	N/A	*The Journal for Nurse Practitioners*	Supports extended scope for MIH providers. Demonstrates that provider confidence in participation of EOL care is dependent on specialized education and training rather than years of experience.	Evidence-based quality improvement project, Mixed methods study w/ surveys, Level VI	Themes included provider knowledge gaps, evidence-based quality improvement, provider confidence, and patient safety.	Wollongong Tool Surveys	14 MIH providers	Voluntary participation from providers within a MIH team	MIH providers with various backgrounds and levels of experience	This quality improvement project was successful for its specific and small sample size; however, there were concerns expressed by participants regarding the clarity of the surveys. Additionally, the education provided was tailored to meet the requests of the MIH team based on their self-perceived knowledge gaps. It is unknown if individualized education is more beneficial than a standardized approach.
Hanson & Kramp	2022	Hospice Patient-Focused Emergency Medical Services Protocols: An Evaluation of Emergency Medical Service Protocols in the United States	N/A	*Journal of Pain and Symptom Management*	The vast majority (>90%) of the U.S. lacks state-provided EMS protocols specifically for hospice patients. Most existing protocols are vague, not evidence-based, and/or are focused only on pre-hospital care or transport avoidance. No specialty or critical care transport protocols were discussed.	Treatment protocol review and report; Level VI	Themes included protocol deficiencies, need for enhanced clinical guidance, and provider comfort/confidence.	N/A	50 state-established protocol sets	Review of each state's EMS protocols for guidance on care of hospice patients	Protocol sets from each state/territory	Not every state and territory had accessible protocols for review and significant variation in EMS involvement in EOL care exists between different states and transport programs.
Isenberg et al.	2021	"Going Home [Is] Just a Feel-Good Idea With No Structure": A Qualitative Exploration of Patient and Family Caregiver Needs When Transitioning From Hospital to Home in Palliative Care	Grounded theory	*Journal of Pain and Symptom Management*	Care can be optimized to improve transitions between care settings for palliative care patients. Resource optimization, coordination efforts, and considerations for alternate EOL care arrangements based on practical patient and caregiver needs can enhance experiences.	Longitudinal prospective qualitative study, Level VI	Themes included patient experience, caregiver perspectives, enablers and disablers of care transitions, and care coordination.	Interviews	39 participants	Recruitment of voluntary participants through palliative care team referrals during two study periods	Adult palliative care patients and their caregivers transitioning from inpatient hospital settings to home	This study did not include the U.S. and its sample size was small with lack of demographic variations. Results may not be respresentative of American palliative care and hospice arena.
Juhrmann et al.	2022	Paramedics delivering palliative and end-of-life care in community based settings: A systematic integrative review with thematic synthesis	N/A	*Palliative Medicine*	EMS providers are capable of delivering EOL and palliative care to patients in community settings, but role needs to be broadened with additional education and training.	Systematic integrative review with thematic synthesis, Level V	Themes included clinical practice guidelines deficiencies, economic considerations, and role expansion of EMS providers.	Whittemore and Knafl's methodology, use of Mxed-Methods Quality Appriasal Tool (MMAT)	23 sources	Multiple database searches were performed with systematic strategies. Inclusion/exclusion criteria were applied, then the quality of the literature was appraised.	Sources were required to be published in English, available as a full-text, peer reviewed, and focused on EMS-provided palliative care in community settings.	No time or age criteria were applied and only a small body of international literature was ultimately reviewed due to lack of available publications.
Killackey et al.	2020	Palliative care transitions from acute care to community-based care: A qualitative systematic review of the experiences and perspectives of health care providers	Grounded theory	*Palliative Medicine*	Provider roles are complex during transitions of care leading to lack of coordination needed to promote optimal transitions. Perceptions of risk in setting of EOL care not well established among providers leading to varied comfort levels for transitioning patients from acute settings.	Qualitative systematic review, Level V	Themes included risk mitigation, health disparities, care coordination, and resource allocation.	Thematic synthesis analysis, Critical Appraisal Skills Program (CASP) Qualitative Tool.	15 sources	Multiple database searches were performed with systematic strategies. Inclusion/exclusion criteria were applied, then the quality of the literature was appraised.	Sources were required to be qualitative studies published in English no earlier than 2015 and focused on palliative care patients being discharged from acute care settings.	There was limited current, high-quality literature available. Not all providers involved in transitions of care were represented in the review. Most sources studied subjects from higher income populations and/or in countires with public health systems.
Leggio et al.	2021	EMS Curriculum Should Educate Beyond a Technical Scope of Practice: Position Statement and Resource Document	N/A	*Prehospital Emergency Care*	On a national level, EMS physicians and educational committees recognize the need for EMS role expansion into a broadened community health resource.	Position statement, Level VII	Themes included competency frameworks, role versatility, education curriculum optimization, and evidence-based practice.	N/A	N/A	N/A	N/A	This generalized position on EMS education addresses social determinants of health, cultural competence, and evidence-based practice, but it is limited in its discussion of hospice and palliative care improvement needs.
Lin et al.	2021	Transferring home to die from critical care units: A scoping review of international practices	N/A	*Journal of Critical Care*	Globally there is strong evidence for prioritizing patient and family wishes at the EOL and such evidence should support transitions out of acute care settings. Unfortunately, there is limited quality data to guide evidence-based interventions and coordination of transitions our of the acute care setting. The importance of increased cultural competence is not to be underscored and not limited by geographical area alone.	Systematic scoping review, Level V	Themes included cultural competence, determinants of health, patient-centered care, optimization and early facilitation of transitions, interdisciplinary care, and resource utilization.	Joanne Briggs Institute methodology, Preferred Reporting Items for Systematic Reviews and Meta-Analyses Extension for Scoping Reviews (PRISMA-ScR) Checklist	28 sources	Multiple database searches were performed with systematic strategies. Inclusion/exclusion criteria were applied, then the quality of the literature was appraised.	Sources were required to be published in English or Chinese from 1970 to 2019 and focused on adult critically or terminally ill patients transferring out of critical care units to home.	Only two reviewed studies were American. The majority of studies were from Europe and China, with a few others from Australia, New Zealand, and Tunisia. The information presented is applicable to cultural competence considerations for studied groups, but reveals gaps for less studied populations and opportunities for application to practice in different geographical regions.
Saunders et al.	2019	Palliative Care Tansitions from Acute Care to Community-Based Care - A Systematic Review	Transition as a Middle-Range Theory was referenced.	*Journal of Pain and Symptom Management*	Transitions of care are understudied, but evidence supports that providers with specialty training improve outcomes, resource utilization, hopsital expenditures, and readmission rates when directly involved in the care of palliative care patients at the EOL.	Systematic review, Level V	Themes included lack of quality research, patient-centered care, interdisciplary teams, perceptions of risks and benefits, and need for further education and clinical guidance.	Cochrane Collaboration's Risk-of-Bias Tool Version 2, New Castle Ottawa Scale	8 sources	Multiple database searches were performed with systematic strategies. Inclusion/exclusion criteria were applied, then the quality of the literature was appraised.	Sources were required to be experimental or quasi-experimental studies of adult critically ill patients transitioning between acute and community care settings published in English from 1995 to 2018.	Even with exclusion of gray literature, systematic reviews, case studies, and protocols from review, the quality of the remaining literature was generally poor. This review was focused on the effect of inpatient palliative care on patients transitioning to community based settings, but several themes were applicable to other providers involved in care transitions at the EOL.

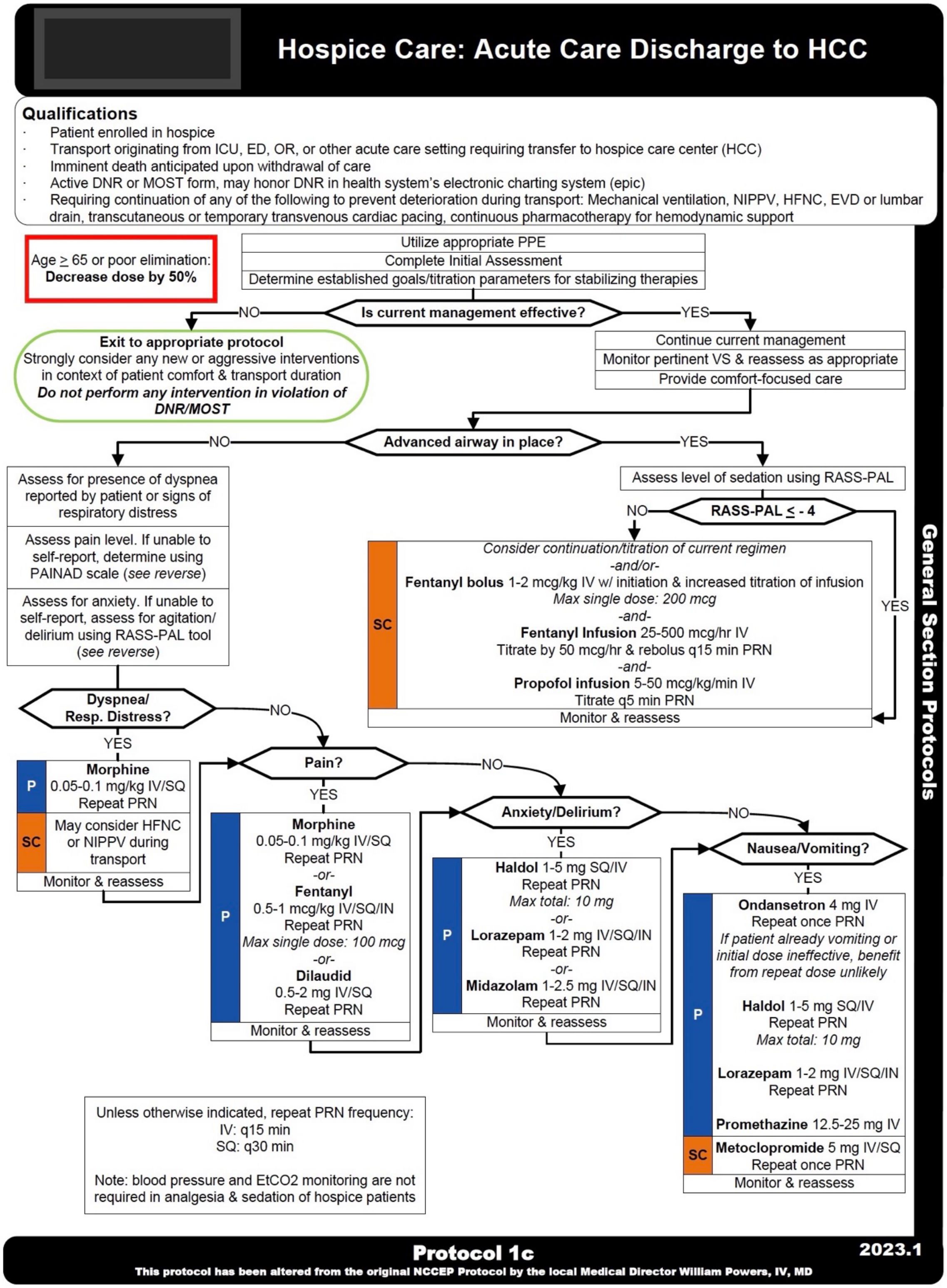
Appendix B

Project Driver Diagram



Appendix C

MIH Hospice Protocol (page 1)



[redacted]

Hospice Care: Acute Care Discharge to HCC

Qualifications

- Patient enrolled in hospice
- Transport originating from ICU, ED, OR, or other acute care setting requiring transfer to hospice care center (HCC)
- Imminent death anticipated upon withdrawal of care
- Active DNR or MOST form, may honor DNR in health system's electronic charting system (epic)
- Requiring continuation of any of the following to prevent deterioration during transport: Mechanical ventilation, NIPPV, HFNC, EVD or lumbar drain, transcutaneous or temporary transvenous cardiac pacing, continuous pharmacotherapy for hemodynamic support

Age ≥ 65 or poor elimination: **Decrease dose by 50%**

Utilize appropriate PPE
Complete Initial Assessment
Determine established goals/titration parameters for stabilizing therapies

Is current management effective?

NO → **Exit to appropriate protocol**
Strongly consider any new or aggressive interventions in context of patient comfort & transport duration
Do not perform any intervention in violation of DNR/MOST

YES → Continue current management
Monitor pertinent VS & reassess as appropriate
Provide comfort-focused care

Advanced airway in place?

YES → Assess level of sedation using RASS-PAL

RASS-PAL ≤ - 4

NO →
SC
Consider continuation/titration of current regimen
-and/or-
Fentanyl bolus 1-2 mcg/kg IV w/ initiation & increased titration of infusion
Max single dose: 200 mcg
-and-
Fentanyl Infusion 25-500 mcg/hr IV
Titrate by 50 mcg/hr & rebolus q15 min PRN
-and-
Propofol infusion 5-50 mcg/kg/min IV
Titrate q5 min PRN
Monitor & reassess

YES → Monitor & reassess

NO → Assess for presence of dyspnea reported by patient or signs of respiratory distress
Assess pain level. If unable to self-report, determine using PAINAD scale (*see reverse*)
Assess for anxiety. If unable to self-report, assess for agitation/ delirium using RASS-PAL tool (*see reverse*)

Dyspnea/ Resp. Distress?

YES →
P **Morphine** 0.05-0.1 mg/kg IV/SQ Repeat PRN
SC May consider HFNC or NIPPV during transport
Monitor & reassess

NO →

Pain?

YES →
P **Morphine** 0.05-0.1 mg/kg IV/SQ Repeat PRN
-or-
Fentanyl 0.5-1 mcg/kg IV/SQ/IN Repeat PRN *Max single dose: 100 mcg*
-or-
Dilaudid 0.5-2 mg IV/SQ Repeat PRN
Monitor & reassess

NO →

Anxiety/Delirium?

YES →
P **Haldol** 1-5 mg SQ/IV Repeat PRN *Max total: 10 mg*
-or-
Lorazepam 1-2 mg IV/SQ/IN Repeat PRN
-or-
Midazolam 1-2.5 mg IV/SQ/IN Repeat PRN
Monitor & reassess

NO →

Nausea/Vomiting?

YES →
P **Ondansetron** 4 mg IV Repeat once PRN
If patient already vomiting or initial dose ineffective, benefit from repeat dose unlikely

Haldol 1-5 mg SQ/IV Repeat PRN *Max total: 10 mg*

Lorazepam 1-2 mg IV/SQ/IN Repeat PRN

Promethazine 12.5-25 mg IV
SC **Metoclopromide** 5 mg IV/SQ Repeat once PRN
Monitor & reassess

Unless otherwise indicated, repeat PRN frequency:
IV: q15 min
SQ: q30 min

Note: blood pressure and EtCO2 monitoring are not required in analgesia & sedation of hospice patients

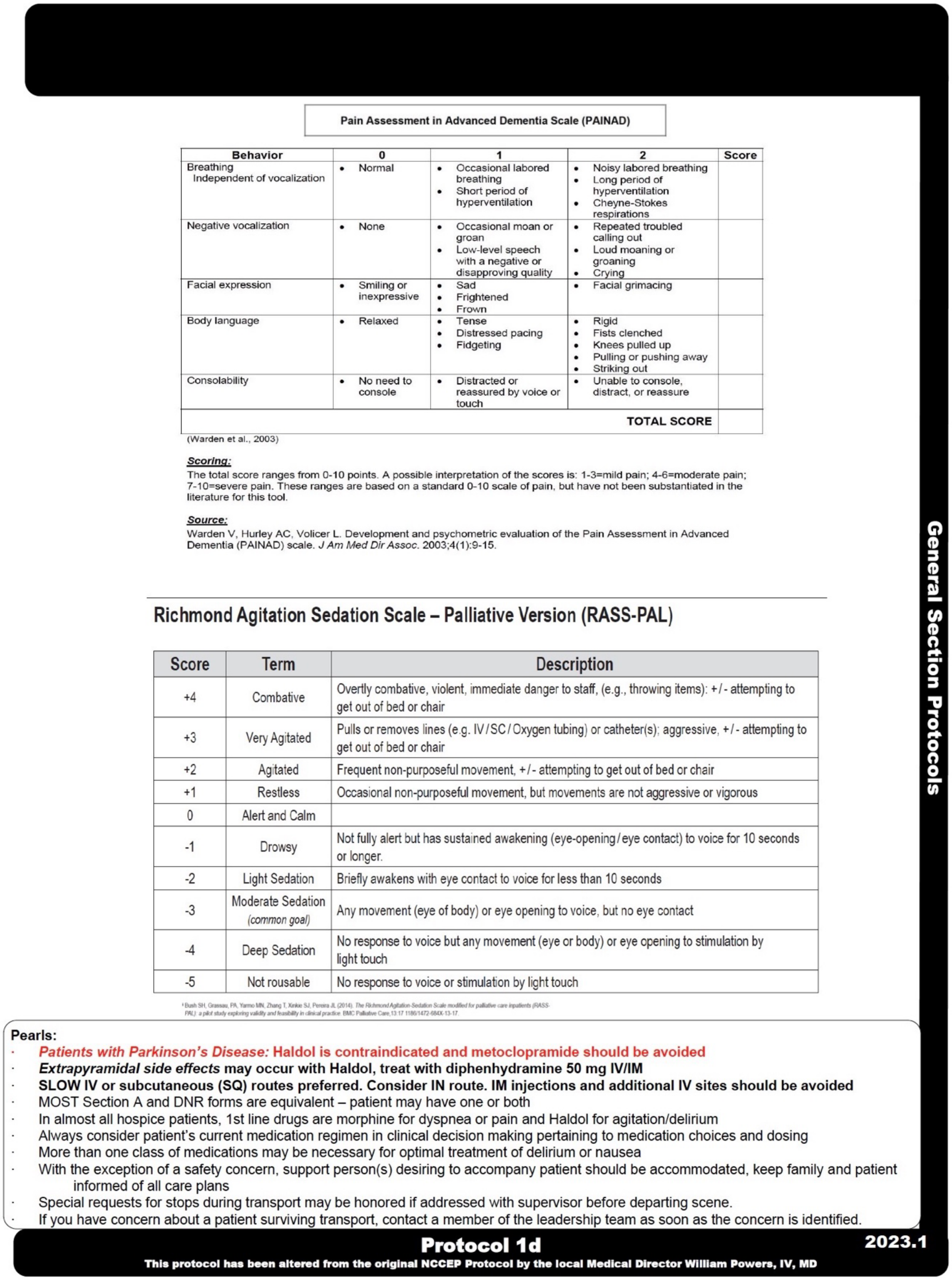
General Section Protocols

Protocol 1c 2023.1

This protocol has been altered from the original NCCEP Protocol by the local Medical Director William Powers, IV, MD

Appendix C (continued)

MIH Hospice Protocol (Page 2)



Pain Assessment in Advanced Dementia Scale (PAINAD)

Behavior	0	1	2	Score
Breathing Independent of vocalization	• Normal	• Occasional labored breathing • Short period of hyperventilation	• Noisy labored breathing • Long period of hyperventilation • Cheyne-Stokes respirations	
Negative vocalization	• None	• Occasional moan or groan • Low-level speech with a negative or disapproving quality	• Repeated troubled calling out • Loud moaning or groaning • Crying	
Facial expression	• Smiling or inexpressive	• Sad • Frightened • Frown	• Facial grimacing	
Body language	• Relaxed	• Tense • Distressed pacing • Fidgeting	• Rigid • Fists clenched • Knees pulled up • Pulling or pushing away • Striking out	
Consolability	• No need to console	• Distracted or reassured by voice or touch	• Unable to console, distract, or reassure	
			TOTAL SCORE	

(Warden et al., 2003)

Scoring:
The total score ranges from 0-10 points. A possible interpretation of the scores is: 1-3=mild pain; 4-6=moderate pain; 7-10=severe pain. These ranges are based on a standard 0-10 scale of pain, but have not been substantiated in the literature for this tool.

Source:
Warden V, Hurley AC, Volicer L. Development and psychometric evaluation of the Pain Assessment in Advanced Dementia (PAINAD) scale. *J Am Med Dir Assoc.* 2003;4(1):9-15.

Richmond Agitation Sedation Scale – Palliative Version (RASS-PAL)

Score	Term	Description
+4	Combative	Overtly combative, violent, immediate danger to staff, (e.g., throwing items): +/- attempting to get out of bed or chair
+3	Very Agitated	Pulls or removes lines (e.g. IV/SC/Oxygen tubing) or catheter(s); aggressive, +/- attempting to get out of bed or chair
+2	Agitated	Frequent non-purposeful movement, +/- attempting to get out of bed or chair
+1	Restless	Occasional non-purposeful movement, but movements are not aggressive or vigorous
0	Alert and Calm	
-1	Drowsy	Not fully alert but has sustained awakening (eye-opening/eye contact) to voice for 10 seconds or longer.
-2	Light Sedation	Briefly awakens with eye contact to voice for less than 10 seconds
-3	Moderate Sedation *(common goal)*	Any movement (eye of body) or eye opening to voice, but no eye contact
-4	Deep Sedation	No response to voice but any movement (eye or body) or eye opening to stimulation by light touch
-5	Not rousable	No response to voice or stimulation by light touch

[1] Bush SH, Grassau, PA, Yarmo MN, Zhang T, Xinkie SJ, Pereira JL (2014). *The Richmond Agitation-Sedation Scale modified for palliative care inpatients (RASS-PAL): a pilot study exploring validity and feasibility in clinical practice.* BMC Palliative Care,13:17 1186/1472-684X-13-17.

Pearls:
- ***Patients with Parkinson's Disease:* Haldol is contraindicated and metoclopramide should be avoided**
- ***Extrapyramidal side effects* may occur with Haldol, treat with diphenhydramine 50 mg IV/IM**
- **SLOW IV or subcutaneous (SQ) routes preferred. Consider IN route. IM injections and additional IV sites should be avoided**
- MOST Section A and DNR forms are equivalent – patient may have one or both
- In almost all hospice patients, 1st line drugs are morphine for dyspnea or pain and Haldol for agitation/delirium
- Always consider patient's current medication regimen in clinical decision making pertaining to medication choices and dosing
- More than one class of medications may be necessary for optimal treatment of delirium or nausea
- With the exception of a safety concern, support person(s) desiring to accompany patient should be accommodated, keep family and patient informed of all care plans
- Special requests for stops during transport may be honored if addressed with supervisor before departing scene.
- If you have concern about a patient surviving transport, contact a member of the leadership team as soon as the concern is identified.

General Section Protocols

Protocol 1d 2023.1

This protocol has been altered from the original NCCEP Protocol by the local Medical Director William Powers, IV, MD

Appendix D

Provider Knowledge Assessment Questions

Hospice Pre- and Post-Assessment Questions

1. You arrive to transport an elderly male from STICU to the hospice care center. He presented to the ED one week ago with hematemesis and near-syncope. He received blood products and emergently required a variceal band ligation to prevent further blood loss. He was revealed to have extensive tumor burden throughout his abdomen. Attempts to wean him from mechanical ventilation have been unsuccessful and according to his wife he has expressed that he wouldn't want to die in a hospital. Four months ago he suffered a CVA, which prompted him to request assistance completing advance directives. Along with his chart, the referring nurse gives you his MOST form. It is valid and in Section A, "No" is selected, but no gold DNR order form is present. What do you do next?

    A. Tell the nurse you can't transport the patient because he doesn't have the gold DNR order form and return to service.
    B. Tell the nurse you can't transport the patient without the gold DNR order form. When she responds with, "the patient has a MOST form," you realize she has no idea what she's talking about, refuse the transport, go get breakfast, then return to service.
    C. Transport the patient to the care center, but leave the MOST form with the referring nurse. Since it is not a gold DNR order form, there's no point in cluttering your clipboard with another piece of paper.
    D. **Transport the patient to the care center accompanied by the MOST form**.

2. 37 year-old female hospice patient with AIDS is complaining of breakthrough pain and dyspnea after being moved between her bed and the stretcher. Her SpO2 is 99% on room air. Which of the following would be the most appropriate?

    A. Oxygen via nasal cannula
    B. Bipap
    C. Morphine
    D. Haldol

3. You are transporting a 78 year old female hospice patient back home after a respite care stay at the care center, as her primary caregiver had to go out of town for the weekend. As its getting dark, the patient is becoming restless and attempting to remove her seat belts. Non-pharmacologic interventions are not working and her RASS-PAL score is +2 (Agitated). She has no IV access. What should you do next?

    A. Start an IV and give her Haldol
    B. Start an IV and give her lorazepam
    C. Administer Haldol SQ
    D. Administer lorazepam SQ

4. After administering Haldol to a hospice patient, you notice he begins having abnormal involuntary movements of his jaw, grinding his teeth, and sometimes smacking his lips. Which of the following interventions is the most appropriate?

    A. Administer diphenhydramine
    B. Administer a repeat dose of Haldol
    C. Administer lorazepam
    D. Do nothing

5. You arrive to transport a patient from the hospital who appears to be resting comfortably, but has a rattling sound that occurs with each breath. The patient's family asks you to do something for the patient because they are concerned he is choking. His respiratory rate is 20, and unlabored. His SpO2 is 97%. What is the most appropriate next step?

    A. Attempt to suction the patient's secretions.
    B. Place another pillow behind the patient's head and slightly shift them to one side when placing them on the stretcher. Assure the family that you will do everything you can to make the patient comfortable.
    C. Ask the referring nurse to call the attending and request an order for a scopolamine patch and then wait for it to be delivered and placed on the patient.
    D. Tell the family, "I'm sorry, but this is just what happens."

6. After checking en route to the hospice care center with a patient and her sister, the patient's sister says, " Now that we are out of the hospital, can't you just give her a little extra of something and get this over with for her?" How do you respond?

    A. "Can you clarify what it is you are asking me to do?"
    B. Turn up the radio and pretend you didn't hear her.
    C. "No."
    D. "I can't believe you would say something like that."

7. You arrive to a patient's room to find the patient in bed surrounded by several people in ornate clothing, some of which are speaking a language you don't understand. They appear to be performing some type of ritual. What do you do next?

    A. Enter the room and offer to lead them in prayer
    B. Wait for them to complete the ritual before entering
    C. Interrupt the ritual to inform them you need to transport the patient now
    D. Find the referring nurse and have her tell them they need to wrap it up

8. A patient's loved one is requesting to accompany the patient during the transport. The individual is behaving appropriately and has displayed no indication of a potential safety concern. How do you respond to this request?

    A. "Sorry, we don't allow riders."
    B. Question the patient about how else they might get to the care center and explain why those ways would be better for them before reluctantly agreeing to allow them the privilege of accompanying their loved one
    C. Tell them they can ride in the ambulance, but make the sole decision to direct them to a passenger's seat in the driver's compartment despite there being an available seat in the patient compartment much closer to their loved one
    D. Tell them they are welcome to accompany the patient and provide them with a safety brief and assistance into the ambulance when able

9. En route to the care center, the patient begins to deteriorate. You attempt to prevent further deterioration, but ultimately the patient dies. You are halfway between the hospital and the care center. What do you do?

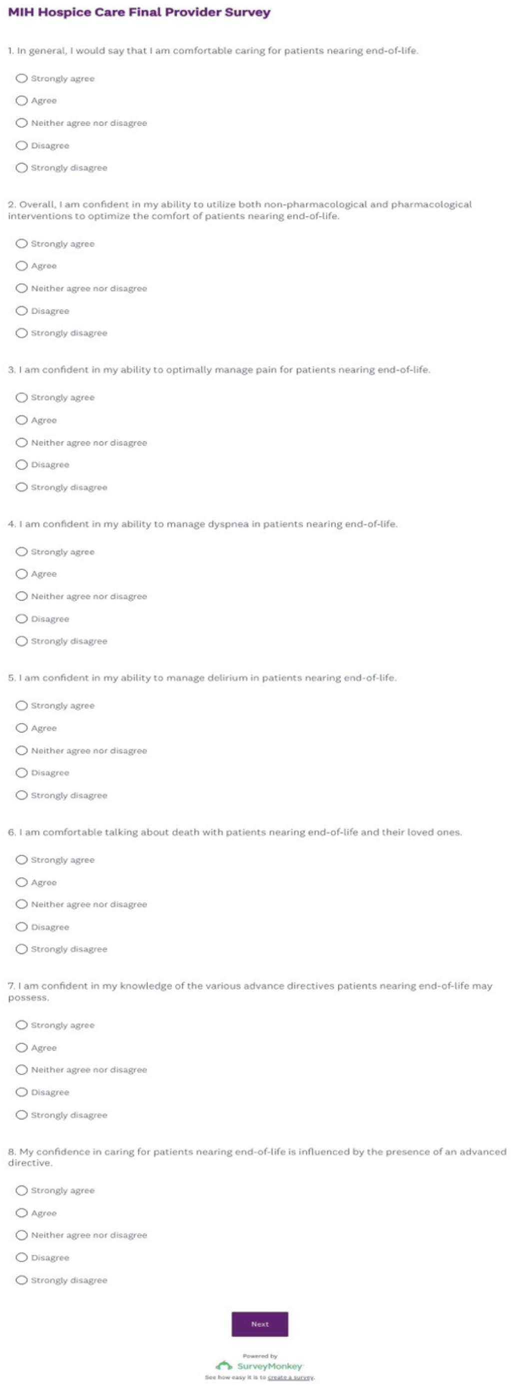
    A. Turn around and attempt to take the patient back to the room they were in before
    B. Turn around and take the patient to the ED for further assistance
    C. Continue to the care center
    D. Call the Regional Transfer Center and ask them what they think you should do

10. If a patient has a PCA pump and they ask you to push their PRN/bolus dose button for them, as long as the medication is within your scope, and you document it appropriately, you may do so.

    True or **false**?

Appendix E

Provider Survey Questions



MIH Hospice Care Final Provider Survey

1. In general, I would say that I am comfortable caring for patients nearing end-of-life.

○ Strongly agree
○ Agree
○ Neither agree nor disagree
○ Disagree
○ Strongly disagree

2. Overall, I am confident in my ability to utilize both non-pharmacological and pharmacological interventions to optimize the comfort of patients nearing end-of-life.

○ Strongly agree
○ Agree
○ Neither agree nor disagree
○ Disagree
○ Strongly disagree

3. I am confident in my ability to optimally manage pain for patients nearing end-of-life.

○ Strongly agree
○ Agree
○ Neither agree nor disagree
○ Disagree
○ Strongly disagree

4. I am confident in my ability to manage dyspnea in patients nearing end-of-life.

○ Strongly agree
○ Agree
○ Neither agree nor disagree
○ Disagree
○ Strongly disagree

5. I am confident in my ability to manage delirium in patients nearing end-of-life.

○ Strongly agree
○ Agree
○ Neither agree nor disagree
○ Disagree
○ Strongly disagree

6. I am comfortable talking about death with patients nearing end-of-life and their loved ones.

○ Strongly agree
○ Agree
○ Neither agree nor disagree
○ Disagree
○ Strongly disagree

7. I am confident in my knowledge of the various advance directives patients nearing end-of-life may possess.

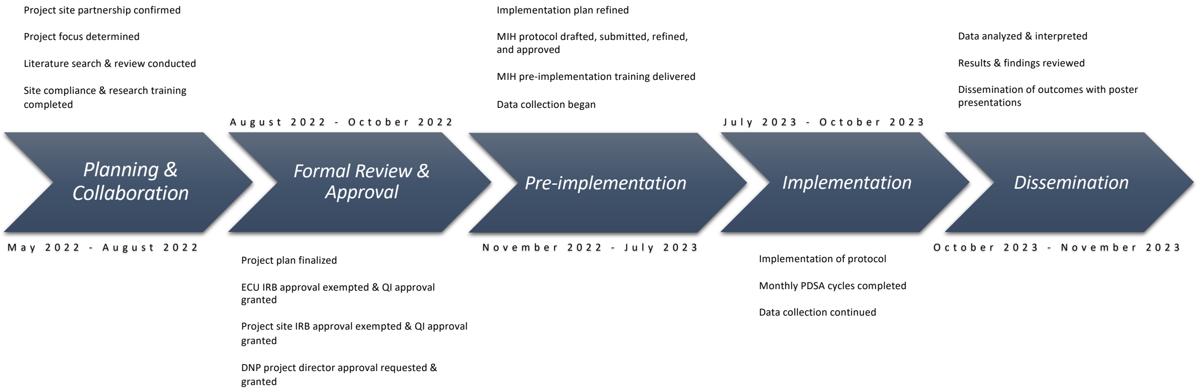
○ Strongly agree
○ Agree
○ Neither agree nor disagree
○ Disagree
○ Strongly disagree

8. My confidence in caring for patients nearing end-of-life is influenced by the presence of an advanced directive.

○ Strongly agree
○ Agree
○ Neither agree nor disagree
○ Disagree
○ Strongly disagree

Appendix F

Project Timeline



Planning & Collaboration

May 2022 - August 2022

- Project site partnership confirmed
- Project focus determined
- Literature search & review conducted
- Site compliance & research training completed

Formal Review & Approval

August 2022 - October 2022

- Project plan finalized
- ECU IRB approval exempted & QI approval granted
- Project site IRB approval exempted & QI approval granted
- DNP project director approval requested & granted

Pre-implementation

November 2022 - July 2023

- Implementation plan refined
- MIH protocol drafted, submitted, refined, and approved
- MIH pre-implementation training delivered
- Data collection began

Implementation

July 2023 - October 2023

- Implementation of protocol
- Monthly PDSA cycles completed
- Data collection continued

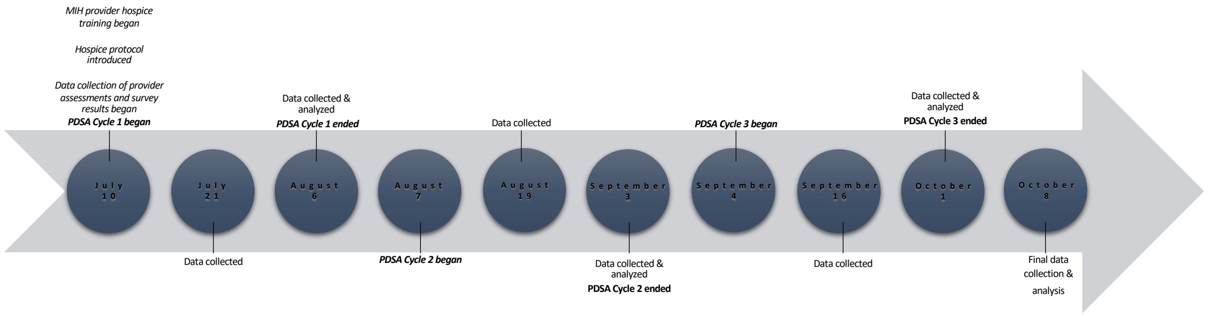
Dissemination

October 2023 - November 2023

- Data analyzed & interpreted
- Results & findings reviewed
- Dissemination of outcomes with poster presentations

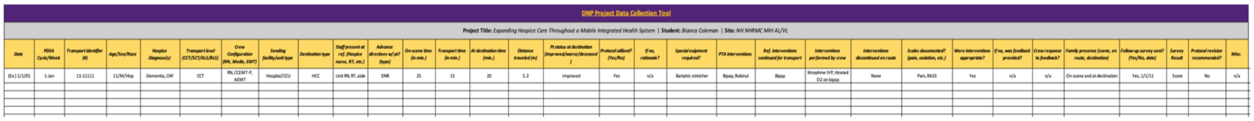
Appendix G

Implementation Timeline



Appendix H

Data Collection Tool



DNP Project Data Collection Tool

Project Title: *Expanding Hospice Care Throughout a Mobile Integrated Health System* | **Student:** *Bianca Coleman* | **Site:** *NH NHRMC MIH AL/VL*

Date	*PDSA Cycle/Week*	*Transport identifier (#)*	*Age/Sex/Race*	*Hospice Diagnose(s)*	*Transport level (CCT/SCT/ALS/BLS)*	*Crew Configuration (RN, Medic, EMT)*	*Sending facility/unit type*	*Destination type*	*Staff present at ref. (Hospice nurse, RT, etc.)*	*Advance directives w/ pt? (type)*	*On-scene time (in min.)*	*Transport time (in min.)*	*At destination time (min.)*	*Distance traveled (m)*	*Pt status at destination (improved/worse/deceased)*	*Protocol utilized? (Yes/No)*	*If no, rationale?*	*Special euipment required?*	*PTA interventions*	*Ref. interventions continued for transport*	*Interventions performed by crew*	*Interventions discontinued en route*	*Scales documented? (pain, sedation, etc.)*	*Were interventions appropriate?*	*If no, was feedback provided?*	*Crew response to feedback?*	*Family presence (scene, en route, destination)*	*Follow-up survey sent? (Yes/No, date)*	*Survey Result*	*Protocol revision recommended?*	*Misc.*
(Ex:) 1/1/01	1-Jan	11-11111	11/M/Hisp	Dementia, CHF	CCT	RN, CCEMT-P, AEMT	Hospital/CCU	HCC	Unit RN, RT, aide	DNR	25	15	20	5.2	Improved	Yes	n/a	Bariatric stretcher	Bipap, Robinul	Bipap	Morphine IVP, titrated O2 on bipap	None	Pain, RASS	Yes	n/a	n/a	On scene and at destination	Yes, 1/1/11	Score	No	n/a

Appendix I

Hospice Education Program Completion Certificate

EMS1 ACADEMY

CERTIFICATE OF COMPLETION

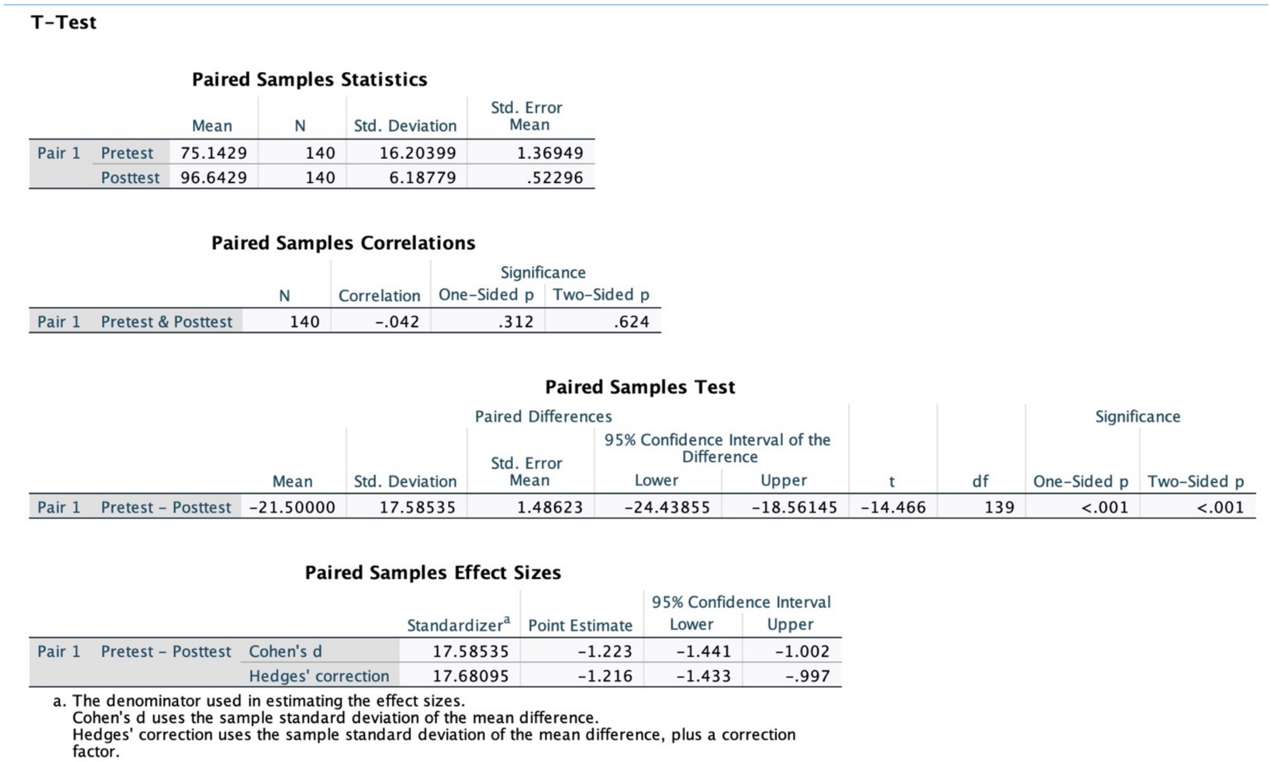
AWARDED TO

BIANCA COLEMAN

OF <MIH System Name>
IN RECOGNITION OF YOUR SUCCESSFUL COMPLETION OF
EXPANDING HOSPICE PATIENT CARE
1 HOUR OF TRAINING
CERTIFICATE ISSUED AUG 31, 2023

Appendix J

Provider Knowledge Assessments Paired Samples T-Test



T-Test

Paired Samples Statistics

		Mean	N	Std. Deviation	Std. Error Mean
Pair 1	Pretest	75.1429	140	16.20399	1.36949
	Posttest	96.6429	140	6.18779	.52296

Paired Samples Correlations

				Significance	
		N	Correlation	One-Sided p	Two-Sided p
Pair 1	Pretest & Posttest	140	-.042	.312	.624

Paired Samples Test

		Paired Differences							Significance	
					95% Confidence Interval of the Difference					
		Mean	Std. Deviation	Std. Error Mean	Lower	Upper	t	df	One-Sided p	Two-Sided p
Pair 1	Pretest - Posttest	-21.50000	17.58535	1.48623	-24.43855	-18.56145	-14.466	139	<.001	<.001

Paired Samples Effect Sizes

					95% Confidence Interval	
			Standardizer[a]	Point Estimate	Lower	Upper
Pair 1	Pretest - Posttest	Cohen's d	17.58535	-1.223	-1.441	-1.002
		Hedges' correction	17.68095	-1.216	-1.433	-.997

a. The denominator used in estimating the effect sizes.
Cohen's d uses the sample standard deviation of the mean difference.
Hedges' correction uses the sample standard deviation of the mean difference, plus a correction factor.

Appendix K

Projects Costs

Project Costs				
Personnel (*paid by project site*)				
Provider level	*Number of providers*	*Avg. pay (per hr)*	*Unit hours*	*Total cost*
EMT-Basic	45	$20.00	1.5 hr	$1,350.00
Advanced EMT	25	$22.00	1.5 hr	$825.00
Paramedic	11	$26.00	1.5 hr	$429.00
Critical Care Paramedic	30	$31.00	1.5 hr	$1,395.00
Critical Care RN	29	$36.00	1.5 hr	$1,566.00
			Total personnel cost:	*$5,565.00*
Supplies and Equipment (*paid by project leader*)				
Item		*Units*	*Per unit cost*	*Total cost*
Monthly survey subscripton service		4	$75.00	$300.00
Badge cards		150	$0.67	$100.50
			Total supplies supplies and equipment cost:	*$400.50*
			Project grand total:	***$5,965.00***

Appendix L

Project Poster

Expanding the Care of Hospice Patients Across a Mobile Integrated Health System

Background

- The COVID-19 pandemic presented challenges to the efficient utilization of critical healthcare resources in addition to obstacles which hindered optimal end-of-life (EOL) experiences for all involved, especially within acute care settings
- The Mobile Integrated Health (MIH) system has been evolving to meet the demands of its region's growing and diversifying population by responding to increased requests for specialized transports of hospice patients to more appropriate settings, such as hospice care centers
- The MIH team of emergency medical technicians (EMTs), paramedics, and registered nurses (RNs) provides the highest level of acute and critical transport care available, but several providers expressed discomfort with EOL care due to knowledge gaps and lack of available clinical guidance

Purpose

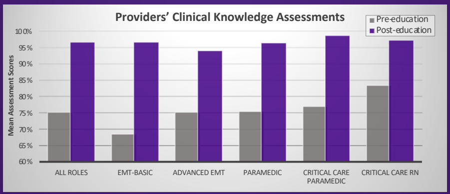
- To optimize the comfort of hospice patients' during transport between acute care settings and hospice care centers and to improve MIH providers' clinical competence in and comfort with providing EOL care

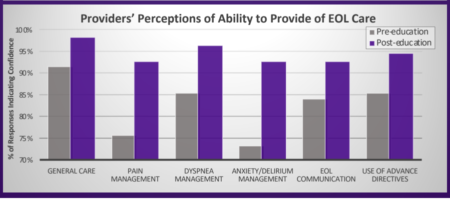
Methodology

- Quality improvement (QI) project implemented an evidence-based, hospice focused education program and novel treatment protocol over 12 weeks utilizing the Institute for Healthcare Improvement's (IHI) Plan-Do-Study-Act (PDSA) model
- Providers' knowledge assessments and surveys prior to and following completion of education were compared to measure effects on clinical competence and comfort with EOL care
- Electronic health records (EHRs) were reviewed to determine compliance with EOL comfort and safety after education and protocol were disseminated

Results/Findings

- Hospice patients experienced improved comfort:
  - 98% of patients with comfort-related complaints on initial exam were reported with improvement in complaints or received interventions in attempt to improve complaints
- MIH providers' clinical competence improved:
  - Average increase of 28.61% in knowledge assessment scores after completion of education module
- MIH providers' perceptions of comfort with providing EOL improved:
  - Average increase of 20.6% in reported comfort levels with managing EOL symptoms
  - 98.5% reported feeling generally comfortable with providing EOL care after implementation


Providers' Clinical Knowledge Assessments


Providers' Perceptions of Ability to Provide of EOL Care

Implications and Impact

- When prepared with specialized education and supported by clinical guidance, MIH providers can confidently and competently provide high-quality EOL care to its patients
- Expanding the scope of practice for MIH providers has proven to have a positive role in facilitating more appropriate utilization of acute care and hospice resources to better serve those in its local community and across an expanding service region which overlaps with other neighboring healthcare organizations
- Utilizing this DNP project to improve care provided by MIH teams required collaboration with multiple levels and types of healthcare providers across several healthcare settings which promoted the strengthening of established interdisciplinary relationships as well as the creation of new relationships

Future Considerations

- Opportunities for the MIH system to positively impact its patients and its community through further prioritization of inclusion and diversity efforts were recognized
- Areas for other scope of practice expansions, such as the potential for MIH involvement in providing terminal withdrawals of care in residential settings, and needs for other areas of focused education, such as pediatric palliative care were identified
- Additional high-quality research is needed in the fields of hospice care and MIH to support improved standards of care and best practices

Acknowledgements

DNP project faculty mentor: Margaret Dillon-Spruill, DNP, RN, ANP-BC
Project site champion: Kevin Collopy, MHL, FP-C, NR-P, CMTE

References available upon request

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Appendix M

DNP Essentials

AACN DNP Essentials
Advanced-Level Nursing Education
Domain 1: Knowledge for Nursing Practice
Integration, translation, and application of established and evolving disciplinary nursing knowledge and ways of knowing, as well as knowledge from other disciplines, including a foundation in liberal arts and natural and social sciences. This distinguishes the practice of professional nursing and forms the basis for clinical judgment and innovation in nursing practice.
Domain 2: Person-Centered Care
Person-centered care focuses on the individual within multiple complicated contexts, including family and/or important others. Person-centered care is holistic, individualized, just, respectful, compassionate, coordinated, evidence-based, and developmentally appropriate. Person-centered care builds on a scientific body of knowledge that guides nursing practice regardless of specialty or functional area.
Domain 3: Population Health Descriptor
Population health spans the healthcare delivery continuum from public health prevention to disease management of populations and describes collaborative activities with both traditional and non-traditional partnerships from affected communities, public health, industry, academia, health care, local government entities, and others for the improvement of equitable population health outcomes. (Kindig & Stoddart, 2003; Kindig, 2007; Swartout & Bishop, 2017; CDC, 2020).
Domain 4: Scholarship for the Nursing Discipline
The generation, synthesis, translation, application, and dissemination of nursing knowledge to improve health and transform health care (AACN, 2018).
Domain 5: Quality and Safety
Employment of established and emerging principles of safety and improvement science. Quality and safety, as core values of nursing practice, enhance quality and minimize risk of harm to patients and providers through both system effectiveness and individual performance.
Domain 6: Interprofessional Partnerships
Intentional collaboration across professions and with care team members, patients, families, communities, and other stakeholders to optimize care, enhance the healthcare experience, and strengthen outcomes.
Domain 7: Systems-Based Practice
Responding to and leading within complex systems of health care. Nurses effectively and proactively coordinate resources to provide safe, quality, and equitable care to diverse populations.
Domain 8: Informatics and Healthcare Technologies
Information and communication technologies and informatics processes are used to provide care, gather data, form information to drive decision making, and support professionals as they expand knowledge and wisdom for practice. Informatics processes and technologies are used to manage and improve the delivery of safe, high-quality, and efficient healthcare services in accordance with best practice and professional and regulatory standards.
Domain 9: Professionalism
Formation and cultivation of a sustainable professional identity, including accountability, perspective, collaborative disposition, and comportment, that reflects nursing's characteristics and values.
Domain 10: Personal, Professional, and Leadership Development
Participation in activities and self-reflection that foster personal health, resilience, and well-being; contribute to lifelong learning; and support the acquisition of nursing expertise and the assertion of leadership.