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Not Ready: The Need for a Training Standard in Healthcare Emergency Preparedness

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Not Ready: The Need for a Training Standard in Healthcare Emergency Preparedness

by

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Abstract

Background: Disasters, both natural and human-induced, are increasing. Disasters impact public health and safety in many ways including disruption of healthcare. Emergency preparedness mitigates disaster impacts. Training improves preparedness however no training standard exists. **Purpose**: This study aimed to explore the current state of U.S. healthcare preparedness and the impact of training on preparedness; determine the best strategies to improve healthcare emergency preparedness training; propose a standard for training in healthcare emergency preparedness; and identify barriers to adopting a standard for training in healthcare emergency preparedness including strategies to overcome identified barriers. **Methods**: A comprehensive literature review, using PRIMSA guidelines, was conducted to inform the current state of healthcare emergency preparedness. Original mixed methods research was conducted to understand different aspects of training on preparedness, inform the recommendation for a training standard and explore potential barriers to adopting a training standard. Sixty-seven participants were included in the quantitative phase which surveyed participants about training quantity (in hours) and delivery format. In the qualitative phase, five focus groups with a total of twenty-nine participants were conducted to deepen understanding of the quantitative results as well as collect information about training topics, barriers to implementing a standard and recommendations for overcoming barriers. **Results**: Ten training topics for a quantity of eleven hours or more per topic were identified in the quantitative phase and reinforced in the qualitative phase. In-person delivery format was preferred for all training topics except for three topics, where online synchronous delivery was preferred. Asynchronous online delivery was not preferred by participants. Other aspects of training were further explored, and the concept of a basic versus advanced training standard emerged as a major theme. Barriers to training included financial support and time to attend training. **Conclusions**: While training is key to improved healthcare emergency preparedness, variation in training exists. This study recommends a standard in healthcare emergency preparedness training and includes the leadership approach to incorporate this plan of change at a national policy level. Barriers to implementation of a standard and how barriers may be overcome are considered. Several areas of future research were identified and included.

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Chapter 1: Introduction and Statement of the Problem

Problem Statement

The public health impact of disasters is well documented and includes both physical and mental injury to the population, death, disruption of services including healthcare, damage, and loss to both private and public physical structures and infrastructure. Disasters can create ongoing impacts to the public's health even after the initial event is over, including ongoing disruption of critical services, damaged or decreased housing, food and water shortages and an increase in communicable diseases (Giorgadze, T., et al., 2011). Healthcare can be impacted by disasters in many ways, including less predictable and higher patient volumes and complexity, shortages in staffing, equipment and supplies, disruption in or loss of utilities such as power and water, and temporary or even long-term closures of facilities (Emigh, et al., 2023).

Emergency preparedness measures and practices lessen the effect of disasters. The International Federation of Red Cross and Red Crescent Societies (IFRC) clearly states the impact of emergency preparedness in mitigating the effects of disasters on public health, stating, "Preparing for disasters saves countless lives, speeds up people's recovery and saves money" (n.p., 2023). Further, the IFRC highlights the importance of improving response capacity and preparedness which is tied to "ultimately preventing and reducing the impacts of disasters on communities" (n.p., 2023).

While training is a critical component of healthcare emergency preparedness, a standard for training does not exist. United States (US) federal regulations outline requirements for emergency preparedness in all 17 healthcare provider types participating in the Medicare and Medicaid programs (e.g. for hospitals, 42 C.F.R. §482.15., 2019),

however there is a lack of clarity for how to meet certain requirements. These regulations include training and testing as a core requirement, mandating healthcare entities to provide and document initial and ongoing training to staff on emergency policies and procedures; however, no specifics are provided as to how this training should be conducted or standardized across healthcare providers.

The COVID-19 pandemic served as a clarion call for the need for increased focus and investment of time and resources in healthcare emergency preparedness (Villa, S. et al., 2021). The development of training standards for healthcare organizations will improve and strengthen their ability to respond to emergencies, while still delivering care and contributing to improved public health.

However, there is evidence that the level of preparedness across the United States (U.S.) healthcare system is highly variable and, in many cases, lacking (Emigh, et al., 2023). A direct correlation exists between training and the ability to prepare for and respond to emergencies (IFRC, 2023). In addition, not all training is created equally. Al-Wathinani, A.M., et al., found competency-based training, designed to develop specific skills, improved readiness and willingness to respond over generalized preparedness training (2021). Another study found the most effective training for disaster preparedness is experiential and application-based (O'Meara, et al., 2019). Emigh, et al. also stressed the importance of real-world training and stated, “Completing ICS courses online does not prepare providers for the reality of emergencies, disasters, catastrophic events, or mass casualty events” (2023, p. 18). Skryabina et al. agreed, finding that healthcare staff who took part in recent, hands-on exercises with realistic scenarios felt better prepared to respond when actual disasters occurred (2020).

One way to improve healthcare emergency preparedness and mitigate the negative impacts of disasters to the public is to design and adopt a standard for training which outlines best practice considerations for training including, quantity of training, (e.g. number of hours on a given topic), training cadence (e.g. annual cycle), training topics (e.g. healthcare surge), and training delivery format (e.g. in-person synchronous). For purposes of this study, the scope was limited to emergency preparedness professionals who have hospitals as a part of their current accountabilities in order to develop a standard for acute environments that can later be spread to less acute and complex healthcare environments and to healthcare providers and workers whose primary role is not emergency preparedness.

Scope and Working Definitions

For purposes of this study, please refer to the following scope and working definitions.

Emergency preparedness (EP) – any activity, including training, designed to plan for and either prevent or mitigate the impacts of emergencies and/or disasters.

Emergency management (EM) – often used interchangeably with EP, however, technically is the administration of a response to a disaster or emergency once it has begun. It can also refer to the department or team within an organization charged with EP within the organization.

Healthcare/healthcare industry – acute/hospital providers, including critical access hospitals and health systems that include hospitals.

Emergency preparedness professionals/Emergency managers – persons whose primary job role is planning for and managing the response to emergencies or disasters.

Emergency/Disaster - An event, either natural or human-induced that can affect the facility/healthcare provider/service internally as well as the overall population or the community at large.

Training – emergency preparedness education and hands-on application including simulation of real-life events.

Training Standard – a set of recommendations around best-practice healthcare focused emergency preparedness training which includes quantity, frequency of training, training topics, and delivery formats.

Purpose Statement

This mixed methods study evaluated the impact of quantity and other aspects of training on healthcare emergency preparedness. A comprehensive literature review, using PRIMSA guidelines, was conducted to inform the current state and includes case examples of training impact on healthcare emergency preparedness. The literature review also illustrates the level of variability in preparedness and training across the U.S. and specific areas of training recommendations generated as a result of responding to disasters. In addition, in partnership with The Association of Healthcare Emergency Preparedness Professionals (AHEPP), original mixed methods research was conducted to understand the impact of training on emergency preparedness, inform the recommendation for a training standard and explore potential barriers to adopting a training standard. A sequential explanatory mixed method design was used. This design starts with quantitative data collection and analysis, then qualitative data collection and analysis, which leads finally to interpretation. In this study, quantitative data including

number of training hours on different topics in hospital emergency preparedness and delivery formats was collected. Qualitative data, collected through focus group interviews, was collected to better understand the quantitative data as well as gather perceptions about the effectiveness of training and creating a training standard. The outcome of this study was a recommendation for a standard in healthcare emergency preparedness training, informed by research and in partnership with AHEPP. Considerations about barriers to implementation of a standard and how barriers to implementation may be overcome was included in the study discussion.

Study Aims

This study had the following specific aims:

1. Explore the current state of U.S. healthcare preparedness and the impact of training on preparedness through a literature review and mixed methods study.
2. Determine the best strategies to improve healthcare emergency preparedness training through a literature review and mixed methods study.
3. Propose a standard for training in healthcare emergency preparedness.
4. Identify the barriers to adopting a standard for training in healthcare emergency preparedness and propose strategies to overcome the identified barriers.

Competencies

In this dissertation, the following DrPH foundational/core competencies were addressed:

- Propose strategies for health improvement and elimination of health inequities by organizing stakeholders, including researchers, practitioners, community leaders and other partners.
    - The recommendation for and implementation plan for a training standard in healthcare emergency preparedness will improve public health and health equity by mitigating the impact of disasters through improved response.
- Create organization change strategies.
    - The recommendation for a training standard for healthcare emergency preparedness will be made at the national policy level which would represent a significant change in the healthcare emergency preparedness field.
- Design a system-level intervention to address a public health issue.
    - The recommendation for a training standard for healthcare emergency preparedness will be made at the national policy level which would represent a significant change in the healthcare emergency preparedness field.

- Deliver training or educational experiences that promote learning in academic, organization or community settings.
    - A part of the implementation plan for the training standard will be to both publish in academic and professional journals as well as application to present at two national educational conferences.

In addition, the following emergency preparedness concentration competencies will be addressed:

- Identify, examine, and construct novel solutions for evidence-based challenges in public health emergency preparedness infrastructure.
    - The recommendation for a training standard for healthcare emergency preparedness will be made at the national policy level and will be designed as an applicable solution to address challenges in emergency preparedness.
- Design implementation and evaluation plans for emergency preparedness programmatic/policy change.
    - The recommendation for a training standard for healthcare emergency preparedness will be made at the national policy level and will include recommendations on implementation and sustainment.
- Describe and select leadership strategies to guide the implementation of public health emergency preparedness programs/policies.

- The recommendation for a training standard for healthcare emergency preparedness will be made at the national policy level and will include recommendations on leadership strategies in emergency preparedness.

Partner Organization

The Association of Healthcare Emergency Preparedness Professionals (AHEPP) is the partner organization for this study and implementation plan. AHEPP is focused on healthcare emergency preparedness with the mission of "Moving Preparedness Forward". The leadership of AHEPP has strong relationships, not just with the healthcare emergency preparedness community but also with the Centers for Medicare and Medicaid Services (CMS) and agreed to partner to both formulate and provide the recommendation for a training standard to CMS. AHEPP has recognized the critical impact training plays in successful healthcare emergency preparedness and response and in releasing professional standards, included training as one of the fourteen core competencies (2022).

Chapter 2: Literature Review and Relevance to Improving the Health of the Public

Background and Significance

In reviewing major disasters in just the last ten years in the U.S. on the Homeland Security webpage, the magnitude is breath-taking. On April 15, 2013, the Boston Marathon bombing occurred. Four people died and another 282 people were injured. While this is tragic, it could have been so much worse. The swift, coordinated multi-agency response to the bombing at the Boston Marathon stands as a best practice example. The after-action report (AAR) from the incident highlights several best practices including 1.5 "Participation in Multi-Jurisdictional Exercises" and 1.6 "Hospital Participation in Emergency Preparedness Planning and Exercises". Each hospital receiving patients also had a dedicated, full-time emergency manager to ensure hospital preparedness, including surge planning and training. The level of planning and preparedness training the city of Boston engaged in prior to the disaster resulted in a successful response, a more effective mitigation of the impact of this disaster to the public, and a faster recovery (Massachusetts Emergency Management Agency, 2014). These training best practices testify to the importance of training in mitigating the impact of disasters and protecting the safety and health of the public. In addition to the healthcare field response, there was a rapid influx of 124 patients requiring acute care, and in most cases surgery, at five different level one trauma centers in the Boston area. From the acute hospital perspective, training was critical to the success of the healthcare response. One of the acute providers stated it is the "responsibility of every hospital to have systems in place to handle the rapid arrival of patients with multiple trauma" (Tobert et al., 2015, p. S7). However, many hospitals are not prepared for this type of

rapid patient surge scenario (Marcozzi, et al., 2021). In their article for the New England Journal of Medicine, Kellerman, et al. state, "too many U.S. hospitals treat disaster preparedness as an afterthought" and go on to outline how healthcare emergency preparedness can focus on closing the gap including, "coordination, standard operating procedures, constant attention to surge capacity, the avoidance of emergency-department overcrowding, the distribution of casualties according to type and severity, and the frequent conducting of rigorous drills" (2013, p. 1). Each of these outcomes are unachievable without training and practice and a solution is to design and adopt a national training standard for healthcare.

Just two days after the Boston Marathon bombing, an explosion occurred at the West Fertilizer Company (WFC), in West, Texas resulting in 15 fatalities and more than 260 people requiring treatment at the hospital, many of whom went on to be hospitalized. According to the investigative report, the WFC explosion was "one of the most destructive incidents ever investigated" by the U.S. Chemical Safety and Hazard Investigation Board (CSB) (2016, p.13) and went on to list lack of training for responders all along the chain as one of the key gaps. In an article for The DO newsletter, the physician who coordinated the healthcare response stated, "I would advise everybody to get some disaster training, especially if you are in a small town. If you are a doctor in a small town and there's a disaster and outside help can't get there right away, you are going to have to do disaster management and help people…" (2018, n.p.). This advice remains relevant not just for doctors, but for healthcare responders and providers overall. This also highlights a gap of available resources between an urban area like Boston and a

rural area like West. A healthcare training standard to set a baseline of preparedness no matter where providers are caring for patients and protecting the public is critical.

Human-induced disasters are a significant consideration in healthcare emergency preparedness. Mass injuries and mass fatalities from shooting events continue to become more common in the U.S. Mitigating the public health impact from this kind of disaster is multi-factorial. Two recent shooting events provide particularly salient examples of the impact training can have and will therefore be reviewed in more depth. The Pulse Nightclub shooting resulted in 49 deaths and 53 injuries. In a critical incident review of the Pulse Nightclub shooting completed by the Community Oriented Policing Services (COPS), the assessment team interviewed a person working security, who also happened to be an Orlando Police Department (OPD) detective. He stated the training provided by OPD was "instrumental" in how he reacted and his ability to respond and survive was due to the quality of training he had received. This was echoed by other first responders, OPD and even civilians. The incident review goes on to state, "The importance of appropriate equipment and training cannot be overstated" (p.65). In a focus group following the event, responders highlighted the need for realistic training, that training helped them to respond, and that the response greatly impacted the outcome of the event. They also stressed the need for training for all personnel. Healthcare professionals involved in the Pulse Nightclub shooting presented at the Institute for Health Improvement (IHI) 28th Annual National Forum Quality Improvement in Health Care Conference. One of the seven key points noted from the presentation is that practice can and will save lives. Mark Jones, President of the Orlando Regional Medical Center, stated the hospital had just participated in a community wide mass casualty drill focused on an

active shooter only three months before the shooting and said, “There’s no question that the work that was done that day helped to save lives. Hospitals, we would really urge you to practice incident command. Drill often. Drill when you are busy. Practice on the weekend. What comes out of that is lessons and learnings and gaps that are identified to help you prepare” (Garfunkel, 2016, n.p.). The Las Vegas Route 91 Music Festival shooting then surpassed the Pulse Nightclub shooting as the worst mass shooting in U.S. history, resulting in the deaths of 58 people and injuring more than 850 people. The Federal Emergency Management Agency (FEMA) conducted an AAR on this event. The importance of training was listed as one of the three key conclusions in the review of the event and in addition, responders interviewed for the AAR “cited training and exercises as being responsible for their ability to mount an effective response” as well as stating additional training is needed to help prepare for future events (2018, p.1). Training is so essential to emergency preparedness and response that it is mentioned more than one hundred and thirty times in the fifty-page AAR document. EMS clinicians, emergency physicians, and surgeons who responded to six mass shootings, including the Las Vegas and Pulse Nightclub shootings, published eight recommendations for healthcare emergency preparedness in the Journal of the American College of Surgeons. At the top was healthcare readiness training, specifically “regular, multi-domain training activities, which mirror the realism of actual events, to ensure readiness of the entire community system” (2022, n.p.).

Weather-related disasters were also prominent during this ten-year period, including Hurricanes Sandy, Harvey, Maria, Florence, Michael, Ida, Ian, a severe winter storm season in 2021 which also caused the Texas power crisis, Winter Storm Elliott and

historic flooding in California in 2022, and very active tornado seasons in 2020 and 2023. To cite the impact of some examples, Hurricane Ian was a category 4 hurricane with 130-156 mph wind speeds and caused 150 deaths and an estimated $112 billion in property damage. Of the many response considerations, more than 4,000 federal level responders were deployed, more than 33,000 people were sheltered in 262 shelters, 183 healthcare facilities were evacuated, and over 3,700 persons were treated at non-acute facilities (FEMA, 2023). On the Administration for Strategic Preparedness and Response (ASPR) stories from the field webpage, healthcare readiness training in Florida for hurricanes was highlighted. In reflecting on the training, one participant stated, “If the HCC had not pushed us to complete the CST tabletop exercise, we might have failed to execute a timely response. Thanks to the training and preparation exercises facilitated by the Emerald Coast HCC, we had the right forms and supplies in place to successfully evacuate within 36 hours” (2018, n.p.). In October of 2012, Hurricane Sandy cut a path of destruction across eight countries, killing 233 people. Of the top recommendations from the U.S. Department of Transportation spotlight report on the incident was to “conduct drills and tabletop exercise to build responder capabilities and experience” (2016, n.p.). Redlener, et al. in their article for the New England Journal of Medicine, discussed the choice healthcare often faces, whether to evacuate existing patients or weather the storm with no electrical power and disruptions to infrastructure (2012). In storms and natural disasters, this is one of many rapid, critical decisions made by healthcare providers. Mass evacuation and patient surge are events in and of themselves, but they can often occur together, and training for these concurrent events provides a path to a successful outcome. In their report on Hurricane Sandy, the American College of Emergency

Physicians noted lack of training as a key gap and listed several specific training opportunities including increased staff training on incident command, as well as evacuation training to include how to use evacuation equipment and training on multiple agency response in an evacuation. They also discussed how training can help responders learn to operate outside of silos to improve coordinated response. They discussed common silos that can exist in healthcare response including Emergency Medical Services (EMS) to hospital, hospital to hospital, hospital to emergency management and EMS to emergency management (2015). Training together creates trust and muscle memory to improve both speed and coordination of response and therefore the effectiveness of overall response.

This ten-year period also included landslides, wildfires, earthquakes, floods, civil unrest and protests, political unrest including the U.S Capitol Riot, the 20-year anniversary of 9/11 and to bookend it all, the beginning of a multi-year pandemic, COVID-19, which is a study in healthcare emergency response by itself. Emergency responders of all origins, career paths and experience levels were called upon to manage a broad array of disasters and in every event, healthcare was a part of the core response and training improved response capabilities. Now is the time to set the standard for training so healthcare responders can be consistent in their ability to care for and protect the public.

Successful emergency preparedness and response is dependent upon many things, including having appropriate resources and training. Balut, et al. studied the emergency preparedness needs of healthcare workers in the Veteran's Affairs system and claimed, "Although there is no consensus regarding the most effective methods of training

healthcare workers in disaster preparedness, disaster training has been shown to improve preparedness knowledge and increase the ability and willingness of healthcare workers to report to work during disasters" (2022, p.) and went out to outline the findings of their study which included 61% of healthcare workers wanted additional training for natural disasters, 63% wanted additional training for pandemics and 68% wanted additional training for man-made disasters. A cross-sectional study on healthcare workers' response to flood emergencies found successful emergency response requires established guidelines and training, ideally using competency-based training and that 90% of participants felt a need to develop both guidelines and training for flood disaster preparedness (Al-Wathinani, A.M., et al., 2021). In another study focused on the effectiveness of response during the COVID-19 pandemic, researchers found the highest probabilities of successful response existed with dedicated emergency management resources and where healthcare workers received training (Richmond, J.G., et al., 2021). The Committee on the Future of Nursing 2030 state in their report, one of the key lessons learned from nurses' response to disasters is the importance of education and training in disaster response. They used Hurricane Sandy as one example and specifically discussed training for triage, evacuation, event management and power outages (2021). The CDC lists three main areas healthcare providers should practice to increase readiness and effectiveness in response: surge capacity, flexibility and continuity of care (2020).

There are various requirements healthcare organizations must meet which are designed to ensure the safety of employees, patients and the public. The Occupational Health and Safety Administration (OSHA) requires healthcare entities to provide annual training to all employees on items including hazardous chemicals, bloodborne pathogens,

fire safety and the utilization of personal protective equipment (PPE) (2023). In the CMS Conditions of Participation (COP), specific training requirements for items like Health Insurance Portability and Accountability Act (HIPAA), infection control and the Quality Assessment & Performance Improvement Program (QAPI) must be met and healthcare organizations such as hospitals are audited on these requirements in surveys (CMS, 42 C.F.R., 2023). Clarifications are periodically published to ensure healthcare entities meet the various requirements. In March of 2023, CMS released guidance for surveyors clarifying that not only should a robust QAPI exist, but surveyors should assess how and to the extent healthcare entities are meeting the QAPI requirements including the criteria for staff training, a plan for continuous improvement and how leadership and governance is involved and actively supporting the QAPI (AHA, 2023). As the training and support requirements increase and become clearer for other critical healthcare programs, such as QAPI, a precedence is set to adopt a clear, specific training standard for healthcare emergency preparedness.

Improved healthcare emergency preparedness improves public health and safety (Elkbuli, A., et al. 2021). It isn't enough to just increase the amount of training. Setting a standard, based on additional factors including type of training, matters. Emigh et al. cited the benefits to adopting a training standard in reviewing emergency medical services (EMS) as an example. One benefit was to ensure a baseline competency no matter where in the U.S an EMS provider is responding which leads to improved response effectiveness and resiliency (2023). While training improves healthcare emergency preparedness and response, there is variability in training and there is not currently a standard for training in healthcare emergency preparedness.

Variability in preparedness and response is a key consideration in understanding the need for a training standard. The COVID-19 pandemic created a public health emergency and strained the healthcare system to the breaking point. In 2021, the U.S. Centers for Medicare & Medicaid Services (CMS) conducted a mixed-methods study to understand how healthcare providers and workers in hospitals and nursing homes experienced the pandemic. Among their findings was the "substantial variation" study subjects outlined in emergency preparedness and therefore ability to respond (Blackstock, et al., 2022, p. 6). Biddinger, et al. studied emergency preparedness capabilities in academic health systems in the U.S. and discussed the amount of "wide" variation that exists. The authors went on to state in their discussion section, "regarding what activities respondents believed would be most important for systems to provide…the development and delivery of quality emergency response training and conduct of exercises ranked highest" (2018, p. 577). Vick, et al., surveyed hospitals across the state of New York and found while more than eighty-seven percent (87%) of respondents had experienced a disaster in the last five years, only seventeen and a half percent (17.5%) felt their disaster plans were "very sufficient" and did not currently need revisions (2018). Harris, et al. studied hospital preparedness in the U.S. regarding the 2017-2018 influenza season and found, "there were systemic vulnerabilities as well as a lack of hospital preparedness planning for future pandemics at U.S. hospitals" (2021, n.p.). It is uncomfortable to contemplate how different our response and recovery in the COVID-19 pandemic might have been by closing the gaps identified then. In the American Hospital Association CLEAR guide, the authors speak to the level of variability stating, "it is clear that emergency preparedness is uneven across the country" and this evidence of variability

was a driver for releasing the guide (AHA, 2022, p. 2). In a large-scale literature review, Melnychuk et al. concluded, "The disaster literature shows that hospitals, health systems, EDs and staff around the world are not prepared for disaster, adequate disaster plans are not in place, plans already in place are highly variable, and the current level of disaster-related education is inadequate for health care workers" (2021, p.12).

Standards are designed to find and adopt best practice and eliminate variation. Standards are one way to hardwire success. Gowing, et al. conducted a comprehensive literature review of disaster preparedness in healthcare providers and staff and among the themes that emerged were the "most effective content and methods for disaster preparedness is unknown". The authors went on to highlight an urgent need for "high-quality research to evaluate the best content and methods of disaster preparedness" (2017, p. 321).

The solution to this variation in preparedness is to research, develop and adopt a training standard for healthcare emergency preparedness. The training standard needs to start with healthcare emergency preparedness professionals. Developing a training standard for healthcare emergency preparedness professionals will benefit healthcare preparedness and response across the U.S. in many ways, including providing standardization and clarity on the quantity and type of training that should be adopted in order to be ready for the multitude of disasters healthcare has faced in the past and must be prepared to face going forward.

Relevance to Improving the Health of the Public

The immediate, acute impacts to public health from disasters, both natural and human-induced, are evident and well documented. Disasters can cause both physical and mental injuries, death, increase in disease, loss of personal and public shelter and facilities including healthcare facilities, loss of infrastructure and has been shown to substantially increase levels of morbidity and mortality. In addition, disasters both natural and human-induced are on the rise which makes finding ways to mitigate the impact to the public's health even more critical (CDC, 2018).

The longer-term impact of disasters is a continued area of valuable study in public health. Many of the issues listed above can carry over from the acute to the long-term. One component of epidemiology is measuring the impacts disasters have on morbidity and mortality long-term. Long-term impacts can also include indirect impacts which may not be as evident as the direct impacts of disasters. Loss of infrastructure can have both short- and long-term impacts and can contribute to increased risk of future disease outbreaks (CDC, 2020). Resilience, both individually and in a community, is a key factor for the public's health overall and for recovery from disasters. Social support and networks are a key contributor to resilience. However, following disasters, social support can decline, and social conflicts can rise due to many factors including loss and stress from the disaster (U.S Department of Veteran's Affairs, 2022). While there are potential solutions for recovering from the longer-term impacts of disasters, mitigating the impact of the disaster in the first place is ideal as this also lessens the long-term impacts and thereby, improves recovery.

Two emerging areas of study on the effects of disasters on public health are the impacts of multiple disasters, and the impact disasters can have on health equity. First, et al. looked at individual and community mental health impacts from managing both a tornado and COVID-19 and cited higher levels of mental health problems including anxiety and depression (2022). Leppold, et al. studied the public health and health equity impact of multiple disasters and found community exposure to multiple disasters can significantly harm both physical and mental health, and health equity by decreased healthcare access due to changes caused by disasters including long term staffing and provider shortages as well as loss of facilities (2022). Hamideh et al., investigated the impact of disasters on health equity in one the Camp Fire, one of the worst wildfires in California history. The authors found significant impacts to both healthcare and education in the communities impacted by the Camp Fire and that vulnerable populations were more significantly impacted. The authors also noted how important re-establishing healthcare was to the recovery process in the impacted communities (2021). In a comprehensive literature review, Balsari, S., et al., claimed "studies have consistently shown that indirect effects from disasters…disproportionately affect poor, elderly, and structurally disadvantaged populations" (2021, p. 1526). COVID-19 unfortunately exposed glaring inequities in our health care systems, "Those who already were suffering from the broad systemic inequities embedded in our health care and social service systems are now being further harmed by the biggest…crisis we've seen in our lifetimes" (Quinn, 2020, n.p.).

In looking at workforce readiness as an aspect of impact to the public, nurses are the core of the healthcare workforce and at the center of both healthcare and public health response to emergencies. In 2020, Dr. Julie Bulson studied nurses' perceived emergency preparedness knowledge and found that “most staff (78.45 percent) have little or no familiarity with their role in disaster response” (p. 129). Dr. Bulson went on to state these study results highlight the critical need for more education in healthcare emergency preparedness and response. In the Committee on the Future of Nursing 2020-2030 report, the authors state, “fundamental reform is needed…across both health care and public health settings to ensure that all nurses...have the baseline knowledge, skills, abilities, and autonomy they need to protect populations at greatest risk and improve the readiness…of the nursing workforce” and goes on to cite COVID-19 as highlighting the fragmentation and “glaring health inequities” of the U.S. healthcare system and as an example for the criticality of having a healthcare workforce that is trained and ready to respond to disasters (2021, p. 247).

Effectiveness of response is directly related to preparedness and preparedness is directly related to training. The report goes on to discuss the fact that the COVID-19 pandemic was ineffectively contained and that individuals of color were disproportionately affected, worsening the health inequities pre-existing in the healthcare and public health systems. Strengthening the ability for healthcare and public health providers to respond will improve not just emergency response but also health equity (Committee on the Future of Nursing 2020-2030 report, 2021).

In a lookback at the evolution of response and management training at FEMA, Stewart, et al. begin with the reason a FEMA training center was established which was the ever-present, evolving and escalating threat disasters cause to public health and safety. In this article, acts of terrorism are highlighted as a specific example of human-induced disasters. One of the key areas of discussion in the article is how training has evolved to address preparedness for human-induced emergencies and training must continue to evolve as threats to public health and safety increase. The FEMA Center for Domestic Preparedness (CDP) has also expanded its mission to include healthcare emergency response and management as one of the four main areas of training due to the core role healthcare plays in emergency response. In their conclusion, the authors state preparing and training for emergencies, both natural and human-induced, needs to remain a constant focus (2019).

Emigh, et al. studied the opportunity to improve healthcare preparedness and response and discussed the impact to public health and health equity due to gaps in the ability to provide care, stating “The current emergency standards for training, exercises, communication, coordination, and response utilized by the United States (U.S.) healthcare system are inadequate to meet patient needs before, during, and after disasters (2020, p. 7). The authors go on to explain the lack of a national standard, and to cite examples of efforts to improve and standardize training and how this can improve healthcare response, community recovery and healthcare delivery overall. The need for a training standard is the central theme in this study and the impact it can have on public health and health equity is a call to action for developing and implementing a standard in healthcare emergency preparedness training.

Puig-Asensio, et al. conducted a large systematic literature review of studies conducted in hospitals regarding preparedness for Ebola and found more than sixty percent of the studies showed benefits of hospital preparedness and most of these studies indicated the benefit came primarily from training (2020).

The American Hospital Association released the CLEAR guide in 2022 and begins with a statement that disasters impact public health in many ways including a shift in societal paradigm. The authors go on to highlight the fact that threats to the public are increasing and one of our collective accountabilities is the level of preparedness is uneven across the country. One of the goals in releasing the CLEAR guide was to provide a roadmap to move toward a standard approach in healthcare emergency preparedness. While the guide provides valuable recommendations, it does not recommend or include a training standard.

Chapter 3: Methodology and project design

Literature Review

A comprehensive literature review following PRISMA guidelines for the literature review component of the study was conducted. The literature review was conducted in order to outline the current state of healthcare emergency preparedness, outline gaps and variability in preparedness and training, outline contributors and barriers to adopting a training standard and how the barriers might be overcome. Case examples from the literature review were included to further highlight healthcare emergency preparedness and response best practices and gaps as well as specific areas of training recommendations generated as a result of responding to disasters. Keywords and key phrases searched included “emergency preparedness”, “hospital preparedness”, “healthcare emergency preparedness”, “public health emergency preparedness”, “healthcare emergency management”, “public health emergency management”, “disaster response”, “hospital disaster response”, “equity in disaster preparedness”, “equity in disaster response”, “disaster management”, “emergency preparedness training”, “emergency preparedness training standard”, “emergency preparedness regulations in healthcare”, “emergency preparedness requirements”, “emergency preparedness training requirements”, “healthcare disaster readiness”, “healthcare preparedness variability”, “improving healthcare preparedness”, “number of training hours emergency preparedness”, “best delivery format for emergency preparedness training”, “emergency manager requirements”, “improving healthcare disaster response”, “emergency preparedness enablers”, “emergency preparedness barriers”, “U.S. disasters”, and “after action reports”. In addition to general internet searches, the Google Scholar, PubMed and

Scopus databases were searched. Articles on healthcare emergency preparedness topics, training in healthcare, equity in response and recovery, barriers to adopting or increasing training in emergency preparedness, responses to disasters, legal or regulatory considerations in healthcare emergency preparedness and resources in emergency preparedness and response were included. Articles on clinical care of patients, patient or specialty care pathways, patient treatment protocols and medical management of patients impacted by disasters were excluded.

Research with a Mixed Methods Design

For the original research component, a mixed methods research design was utilized. Wasti, S. P., et al. discussed the growing importance of mixed methods research in healthcare stating mixed methods has been overlooked and is very applicable due to the approach of using and mixing both quantitative and qualitative information to understand a problem more completely (2020). The philosophical perspective for mixed methods used in this study was pragmatism. Pragmatism is focused on using multiple perspectives, practicality and applicability, which are all goals for the dissemination of this study.

As mentioned in the purpose statement, an explanatory sequential design was utilized. Explanatory sequential design can weigh qualitative and quantitative data equally, but it leads with quantitative data and utilizes qualitative data to help understand the quantitative data more deeply. For study timing, quantitative data collection and analysis were conducted in the first phase of the study followed by qualitative data analysis and then finally mixing, analysis and interpretation of the integrated data.

Interpretation of the data included highlighting and discussing areas of convergence or divergence between the qualitative and quantitative results. In their article, the "Unwritten Rules of Talking to Doctors About Depression: Integrating Qualitative and Quantitative Methods" Wittink, et al. (2006) used explanatory sequential design to both hypothesis test and hypothesis generate, thus highlighting an additional advantage in selecting the explanatory sequential design for this study. Several areas of future research were identified as a result of this study. This design type was appropriate because the qualitative phase was used to help more deeply understand the quantitative data and gather perceptions and opinions about a training standard in addition to quantitative data. It was also appropriate as utilization of mixed methods resulted in a stronger study overall as compared to utilizing only quantitative or qualitative methods (Wittink, et al., 2006).

Internal Review Board (IRB)

This study was reviewed by UNMC IRB and was determined to be exempt under exemption criteria number two. IRB # 0585-23-EX.

Study Population

The study participants included members of AHEPP, members of U.S. Healthcare Preparedness Coalitions and emergency preparedness professionals from U.S. healthcare organizations which included a variety of people and a variety of exposures and experience in healthcare emergency preparedness. Study participants were sourced from AHEPP membership, attendees at the 2023 National Healthcare Coalition Preparedness

Conference (NHCPC) as well as from U.S. healthcare organizations by an open call to participate which was conducted through AHEPP. Diversity of respondents was sought through this methodology to ensure a broad perspective was obtained, to minimize research bias and that diversity, equity and inclusion was followed as a tenet of this research. The criteria to participate was a minimum of one year of experience in acute healthcare emergency response and willingness to participate in either the survey or interview component of the study. Participation was strictly voluntary, and participants could withdraw from the study at any time.

Quantitative, Qualitative and Mixed Methods Research Questions

The mixed method or overarching research questions were (1) what impact does training have on healthcare emergency preparedness and (2) how can a training standard improve healthcare readiness?

Quantitative research questions were designed, with the guidance of the dissertation committee, to collect information about the amount of training in hours subjects received in the last year, information about training topics and training delivery formats.

Qualitative research questions were designed, with the guidance of the dissertation committee, following initial analysis of the quantitative data and to better understand and explain the information gained in the quantitative phase as well as to understand the respondents' ideas and opinions on training impacts on healthcare emergency preparedness and perceived barriers in adopting a training standard.

Quantitative approach, data collection and data analysis procedures

Quantitative methods involved a survey conducted at the 2023 National Healthcare Coalition Preparedness Conference (NHCPC). The survey was delivered in a hard copy format. To improve the reliability and validity of the data, a minimum sample size of thirty participants was set (Faber, et al. 2014). However, a total of seventy-two subjects participated. Based on this strong response, the quantitative phase was closed following collection of data from seventy-two subjects.

Quantitative survey questions were developed with the dissertation committee which included subject matter experts at the University of Nebraska Medical Center College of Public Health.

Subjects were first asked the question, “Does a part of your current job involve emergency preparedness in a hospital environment?”. Subjects answering “no” were excluded from the quantitative data. Subjects were then asked five questions about ten training topic categories.

> “In the last year, please estimate the number of hours of training you have had in the topic listed in the following rows (0 hours, 1-5 hours, 6-10 hours, 11-15 hours, 16 hours or more)”.
>
> “Did you feel the amount of training you received was sufficient to be proficient in that topic area?” (yes/no).
>
> “What was the format of the training?” (In-person synchronous, Online/Virtual synchronous, Online/Virtual asynchronous).
>
> “Was the format appropriate for this topic?” (yes/no).

"If not, which format would have been preferable?" (In-person synchronous, Online/Virtual synchronous, Online/Virtual asynchronous).

The ten training topic categories were: Incident command systems (ICS), Conducting a hazard vulnerability analysis (HVA), Writing your emergency preparedness plan, Exercise design/ exercising your plan, Risk communications (internal and external), Facilitation (convening partners for collaboration), Healthcare surge (trauma-based and ID-based), Healthcare evacuation, Business continuity, Other specialized responses (chem/rad/active shooter). Lastly, subjects were asked, "Please list the other topics for which you have received training in healthcare emergency preparedness you felt was valuable, that are not listed in this survey".

Data analysis included reviewing the data and preparing descriptive statistics tables showing responses and percentages for each question. Comparisons amongst the question response categories and data trends are noted in the findings and discussion. A quantitative analysis expert was consulted to review the quantitative data analysis process and quantitative findings.

Qualitative approach, data collection and data analysis procedures

Qualitative methods involved focus group interviews. The study participants were a sample from the AHEPP membership which represented a diverse group of healthcare emergency preparedness professionals from across the U.S. recruited for the focus groups via an open call email sent by AHEPP. A minimum of fifteen participants for this phase was set, but greater than thirty volunteers were received, which was determined to be sufficient, and the recruitment for the qualitative phase was closed at that time.

Participants were assigned to one of five focus groups based on their availability. Focus groups were limited to a minimum of two and a maximum of eight participants in each group prior to assignment. There were five focus groups for a total of twenty-nine final participants in the qualitative phase. To improve reliability and validity, a single interviewer conducted all the interviews using the same set of standardized questions. The qualitative questions were developed with the dissertation committee, who are also subject matter experts from the University of Nebraska Medical Center College of Public Health. In addition, qualitative questions were created following the quantitative data analysis to ensure evaluation of the quantitative data was deepened by the qualitative phase. The qualitative questions were provided to all qualitative subjects in advance of the focus group once they were scheduled for one of the focus groups. All subjects had an equal opportunity to review the instructions and qualitative questions in advance of the focus group session for a minimum of seven calendar days. All interviews were recorded in order to ensure accuracy and to facilitate the quantitative data analysis. Participant consent to be interviewed and recorded was obtained both during scheduling of the focus groups as well as at the start of the focus group session. There were no participants who declined to be recorded.

The focus groups allowed for a deeper understanding of the qualitative data collected in phase one of the study as well as participants perceptions around the impact of training on readiness in disaster response. The interviews further highlighted whether only quantity of training improves readiness or whether aspects such as delivery format of training also impacts readiness. Lastly, the interviews served to collect recommendations from the participants to inform a training standard, potential barriers to

implementation of a training standard as well as ideas for overcoming barriers to implementing a training standard.

The qualitative questions and probes utilized were:

"In addition to the ten training topic categories mentioned above, are there others you believe should be covered at a regular cadence or frequency for emergency managers focusing on hospital healthcare preparedness and response?"

Additional probes:

"Are there training topics you have attended that you found to be especially valuable for healthcare emergency preparedness?"

"Our survey data showed a minimum of 11 hours on each of the ten training topics above was considered sufficient by respondents. What are your reactions to that quantity of training?"

Additional probes:

"Why do you think this (11 or more hours) on a specific topic is optimal?"

"Describe training you attended that was 11 or more hours?"

"What did you like most?"

"What did you like least?"

"Were there activities or engaging experiences that stood out?"

"Our survey data showed in-person training was preferred, followed by synchronous online training, for all training topics except "writing your plan", "business continuity" and "other specialized responses", where synchronous online training was

preferred, followed by in-person training. Online asynchronous was not preferred for any topics. Synchronous training is training learners take together at the same time. Asynchronous training is training that learners take independently at different times. What are your reactions to the training delivery preferences?"

Additional probes:

"Describe a great/effective in-person training that you've attended."

"What features made it more engaging and rewarding (including items like speaker ability, learning environment, engaging activities, etc.…)"

"Describe a great/effective synchronous online training that you attended."

"What features made it more engaging and rewarding (including items like speaker ability, visuals or graphics, engaging activities, etc.…)"

"Describe a great online asynchronous course that you took."

"What features made it more engaging and rewarding (including items like speaker ability, content presentation strategies, engaging activities, etc.…)"

"In contrast, are there any training experiences you took that were not successful or engaging?"

"What features made is less engaging?"

"What factors in addition to training topics, number of hours, frequency and delivery format should be considered in a training standard?"

"How often should the training for these 10 topics be required (note this is a total of 110 or more hours of training)? (for example, annually, every other year, etc.)"

Additional probes

"Are there topics that should be covered more frequently?"

"What barriers to adopting a training standard for healthcare emergency managers do you think might exist in your organization? (including items like financial, leadership or leadership knowledge barriers, staffing and coverage barriers, etc…)"

"Do you have recommendations for overcoming these barriers?"

Additional probes

"What other funding sources are there to assist with financial barriers? (Philanthropy, grants, coalitions)"

"What leadership education exists to foster support?"

"What intercompany or community partnerships exist to assist with coverage?"

Qualitative data analysis included review of the qualitative interviews for themes on training in readiness for disasters as well as utilization of MaxQDA qualitative analysis software to develop themes. Mentions of specific words and themes were coded and quantified using MaxQDA. The methodology of counting mentions in qualitative analysis is valuable in determining themes. Macfarlane & AbouZahr, (Eds.) outline this methodology in their text and recommend researchers "count the number of times key words appear" as a method of qualitative analysis (2019, p.314). Hannah & Lautsch reviewed multiple qualitative research studies for their article on when counting in qualitative analysis should and should not be used. In giving an example of appropriate uses of counting mentions in qualitative analysis, the authors cited a study where the

researchers were studying use of influence and cited, “They identified a number of issue selling approaches, and for each one, they counted the number of times managers mentioned that approach” (2011, p. 16). An expert in qualitative analysis was consulted to review both qualitative analysis methods as well as coding methodology in MaxQDA. Mentions of themes were coded once per participant per question. Qualitative data analysis assisted in establishing themes for a training standard and potential barriers to implementation of a training standard.

Data integration/mixing and interpretation

The quantitative data and qualitative data were mixed by applying the themes which emerged from the qualitative phase to the quantitative data findings. Interpretation of the data included highlighting findings from both phases and highlighting areas of convergence between the qualitative and quantitative results.

Findings including areas of future research was summarized and then reviewed with an advisory board which included subject matter experts from the University of Nebraska Medical Center College of Public Health. The quantitative data, qualitative data, findings and interpretation was also reviewed with a statistics and quantitative expert and a qualitative expert respectively, both from the University of Nebraska College of Public Health.

The researcher completed quantitative and qualitative review and analysis. This review included the data in raw form, the analysis of the independent data sets, data analysis methods, the findings from the independent data sets, the integration methods, the analysis of the integrated data and the findings from the integrated data. Data,

information and findings were fully discussed, and study limitations and areas of future research are included in the study discussion.

Finally, a recommendation for a training standard in healthcare emergency preparedness, based on the findings in the study, was proposed to the subject matter experts. The subject matter experts included representation from the University of Nebraska Medical Center College of Public Health in the Emergency Preparedness Department, the healthcare industry, and the partner organization, AHEPP. A consensus on a training standard amongst this advisory committee and the researcher was reached and this is the recommendation that was carried forward in the study and in the plan to disseminate research. Barriers to implementation that emerged as key considerations were shared with the advisory group and included in the findings and recommendations of the study along with potential solutions for overcoming barriers to implementation. A detailed plan of change, including how to address incorporating the standard at both a national policy level and at an industry level was included and outlined in subsequent chapters.

Chapter 4: Results

Quantitative findings

Completion Rates

A total of seventy-two subjects participated in the quantitative survey. Of these seventy-two, sixty-seven (93%) of those who took the voluntary survey stated they had accountability for emergency preparedness in hospitals as a part of their current job. Emergency preparedness professionals who did not indicate hospital responsibilities as a part of their current job were excluded from the quantitative data.

In completing the survey, if a participant answered "zero" hours of training in a topic category, no other questions in that training topic category would apply.

All sixty-seven respondents, (100%) included in the quantitative phase completed the question, “In the last year, please estimate the number of hours of training you have had in the topic listed in the following rows” and completed the question, “Did you feel the amount of training you received was sufficient to be proficient in that topic area?”. Sixty-five participants (97%) responded to the question, “What was the format of the training?” and fifteen (22%) indicated multiple responses for one or more of the training topic categories when responding to this question. Sixty-one respondents (94%) answered the question, “Was the format appropriate for this topic?” for one or more of the training topic categories. For the last question on preferred delivery format, sixty respondents (90%) answered the question for one or more of the training topic categories and eighteen respondents (27%) selected multiple formats for one or more of the training topic categories when responding to this question. In order to accurately represent the question completion rates, a numerical value of one (1) was given in those instances where one

subject provided multiple responses on the questions regarding format taken and format preferred. This approach was confirmed through review of the raw data with a statistician.

Survey Results

For the question "Please list the other topics for which you have received training in healthcare emergency preparedness you felt was valuable, that are not listed in this survey", only two respondents answered (3%). Topics listed by these respondents were responder health and safety, responder mental health, and crisis leadership.

In the data for total training hours in the last year, the greatest majority (30%) answered in the '1-5 hours' category across the ten training topic categories. Review of specific topics shows the topic of healthcare evacuation had the greatest number (30%) of respondents who selected zero hours of training in the past year while the topic of incident command had the greatest number (39%) of respondents who selected sixteen or more hours of training. A full breakdown showing percentage of respondents in training time by training topic is shown in Table A.

Table A - Percentage of Responses Regarding Total Number of Training Hours per Training Topic in the Last Year

#hrs training	Incident Command	Hazard Vulnerabilty Analysis	Writing your EP Plan	Exercise Design/ Exercising	Risk Communi-cations	Facilitation/ Collaboration	Healthcare Surge	Healthcare Evacuation	Business Continuity	Other Response Types
0	10%	10%	9%	10%	19%	15%	7%	30%	27%	0%
1 to 5	18%	37%	27%	18%	51%	30%	28%	25%	25%	37%
6 to 10	21%	31%	24%	30%	6%	13%	34%	24%	36%	19%
11 to 15	12%	6%	6%	12%	9%	18%	9%	3%	0%	9%
16 or more	39%	15%	34%	30%	15%	24%	21%	18%	12%	34%

Summary data for training hours indicates that sixty-five percent (65%) of respondents felt '1-5 hours' of training on a given topic was insufficient while only five percent (5%) answered that '16 or more hours' of training on a given topic was insufficient. A breakdown of this data can be seen in Table B.

Table B - Percentage of Responses Regarding Insufficiency of Training Hours Across Training Topics

Training insufficient (ie: where answer was no)	Incident Command	Hazard Vulnerability Analysis	Writing your EP Plan	Exercise Design/ Exercising	Risk Communi-cations	Facilitation/ Collaboration	Healthcare Surge	Healthcare Evacuation	Business Continuity	Other Response Types
0										
1 to 5	33%	44%	56%	33%	56%	80%	79%	88%	76%	72%
6 to 10	36%	24%	13%	40%	75%	44%	17%	50%	8%	15%
11 to 15	25%	0%	0%	25%	33%	17%	33%	0%		0%
16 or more	8%	10%	4%	5%	0%	0%	14%	8%	13%	4%

Training formats taken varied by topic, but in-person training was the highest percentage of delivery modality taken at fifty percent (50%), followed by online synchronous at forty-two percent (42%) and online asynchronous at eight percent (8%). Topic specific data for the training format taken can be found in Table D.

While sixty-one (94%) of respondents answered the question, "Was the format appropriate for this topic?" for one or more of the training topic categories, the number answering on appropriateness of delivery format for a given topic category was low. Therefore, responses are shown in total versus breakout format in Table C. Lastly, data on preferred format is also shown in Table D. As highlighted in the data, in-person

training is preferred overall but for some topics, online synchronous is sometimes preferred by respondents depending on the topic**.**

Table C - Response Rates Regarding Appropriateness of Training Formats

Format inappropriate (where answer is no)	Totals	Total
In person	0	0%
Online synchronous	39	15%
Online asynchronous	16	31%

Table D - Percentage of Responses Regarding Training Formats Taken and Preferred for Each Training Topic

	Incident Command	Hazard Vulnerability Analysis	Writing your EP Plan	Exercise Design/ Exercising	Risk Communi-cations	Facilitation/ Collaboration	Healthcare Surge	Healthcare Evacuation	Business Continuity	Other Response Types
Format taken										
In person	44%	38%	38%	58%	37%	64%	61%	58%	52%	51%
Online synchronous	39%	50%	44%	33%	59%	36%	36%	42%	41%	40%
Online asynchronous	17%	12%	18%	8%	4%	0%	3%	0%	7%	9%
Format preferred										
In person	46%	50%	24%	58%	58%	77%	77%	78%	38%	40%
Online synchronous	35%	42%	45%	25%	42%	23%	23%	22%	58%	47%
Online asynchronous	19%	8%	31%	17%	0%	0%	0%	0%	4%	13%

Qualitative findings

Themes about the need for a training standard was strong across all focus groups and was mentioned a total of sixty-four times:

"*I'm still fairly new to hospital emergency management and received no training*." (Focus Group Participant).

"*There is never enough training, and we can never stop training*." (Focus Group Participant).

"*I know it's extremely difficult in healthcare, but I put everything on training, everything*." (Focus Group Participant).

Training Topics

When respondents were asked to make suggestions for additional regular training topics, participants across every focus group discussed incident command operations with a focus on the operational aspects of incident command. The participants indicated a need for a broader understanding of how command centers need to collaborate, communicate, and operate in addition to the exposure to structure and job roles that is highlighted in traditional incident command systems training. Themes about ICS and ICS operations were mentioned twenty-eight times. Participants further stated ICS training needs to be healthcare specific because much of the ICS training available is taught from a government or public health lens and healthcare is unique.

The need for more options for training on healthcare specific topics for emergency preparedness in general, especially for more experienced emergency managers, was a theme across groups and was mentioned seventeen times:

"*Healthcare emergency preparedness is a whole field in and of itself*" (Focus Group Participant).

The participants also highlighted the importance of including interactive training as a part of incident command and mentioned including running scenarios where incident command is initiated and operated for several hours as a part of the scenario. The importance of hands-on, interactive training was also a theme across groups and questions and was mentioned forty-two times. Hands-on training includes being able to physically practice skills such as patient evacuation which is difficult to simulate in online delivery formats.

Topics of interest for experienced emergency managers but not recommended as a need to include in a basic training standard included emergency preparedness regulatory standards and training on general leadership skills. Some other topics of interest mentioned with less frequency included resiliency and responder stress management, improving after-action reporting, grant writing, how to best train others in emergency preparedness and response, cyber-readiness, de-escalation techniques, the importance of professional organizations and healthcare coalitions, and patient tracking and reunification. While these last topics do not represent a theme across groups, they are being listed to comprehensively capture what was recommended for possible training topics of interest outside of a basic training standard by these subject matter experts.

Participants were then asked about training they attended that they found to be especially valuable for healthcare emergency preparedness. Recommendations included courses offered by FEMA, specifically courses such as the ICS and Emergency Management Institute (EMI) courses, courses offered by the Center for Domestic Preparedness, specifically, the in-person courses on incident command and healthcare specific responses as well as courses offered by AHEPP, specifically the course on ICS with a practice exercise incorporated into ICS.

Quantity of Training

Focus group participants were asked about the quantity of training identified as sufficient by survey respondents. Focus group participants indicated the amount of training needed might vary by topic and level of experience but that eleven hours per training topic category was an appropriate starting point for most topics. This led to a top theme across groups that there should be an "entry-level" or basic amount of training for new healthcare emergency preparedness managers and then a certain number of hours per year that experienced healthcare emergency managers take to maintain competency. The recommendation to delineate between basic versus advanced requirements emerged across groups and across questions and was mentioned a total of forty-two times.

Participants stated eleven hours per training topic category was an appropriate starting point:

"*11 hours, (per topic) that's a good start.*" (Focus Group Participant).

However, some participants went on to indicate the specific topic of exercising, mentioned twenty-eight times, needs to be many more hours, such as forty or more, to gain a basic competency:

"*When you get to exercises…you're talking…40 hours minimum"* (Focus Group Participant).

Lastly, in discussing quantity of training, a consensus amongst the focus groups was that the quality of the training was just as important as the quantity of the training. This led to responses about delivery format, which were captured in the next questions.

Delivery Format

In discussing delivery formats, a theme across all focus groups, which aligned with the survey findings, was that in-person training was preferred:

"*In-person collaboration really can't be replicated*." (Focus Group Participant).

"*All of our clinicians, they have mandatory required in-person trainings, which elevates and escalates up the nature and the importance of the training that needs to happen. So emergency management really shouldn't be different. We should be allowed to have that in-person time together to have that, this very important and necessary training.*" (Focus Group Participant).

In-person training was mentioned across all groups a total of twenty-six times and interactive training was mentioned across all groups a total of forty-two times. A related concept threaded across groups was that in-person and synchronous online training allows for interaction with other participants:

Interaction with other participants "*is just as if not more important than interacting with the instructors*" (Focus Group Participant)

Some participants expressed online asynchronous training was not preferred because online asynchronous training was not interactive:

Online asynchronous training "*is just a check the box activity*" (Focus Group Participant).

Other Factors in Training

The importance of interaction was also reinforced in answers to the additional questions about other factors that should be considered in a training standard. Participants indicated that opportunities for participatory components and interaction with others taking the course were the most valuable and engaging aspects:

"*Networking and learning from others is such an important part*" (Focus Group Participant)

"*Every adult learns differently…the demonstrating, the actually doing, that's where I learned the most*" (Focus Group Participant).

Other suggestions across groups that reemerged with this question included the idea of a basic versus advanced set of recommendations based on experience, a desire for more healthcare specific training opportunities and a desire for more options for advanced training for experienced healthcare managers:

"*So much is designed for people who are new to the field, which is great for a basic training standard, but there are also a lot of very experienced people that would appreciate more options for advanced training or training that goes deeper than just the basic understanding of a topic*" (Focus Group Participant)

Additional concepts that emerged with the prompts about what makes training valuable included that training needs to be interactive and specific, not passive or general. Incorporating case examples, stories and chances for group interaction and discussion were components that participants highlighted:

"*I have been to too many trainings where presenters read their slides, I can read by myself. When I make an effort to go to training in person, the value is in interactive and hands-on components*." (Focus Group Participant).

Training frequency

When asked about how often training for the ten topics should be required, focus group participants most often indicated three years (mentioned seven times) and reiterated the recommendation for different training standards based on experience:

"*Three years* (to complete training) *but we need to have a basic versus advanced* (standard)." – Focus Group Participant

A consensus across groups was that new healthcare emergency managers would benefit from the ten training topics and the quantity of training listed, with recommendations for requiring more than eleven hours for the topic of running exercises.

A corresponding clarification on the idea of different training standards emerged with this recommendation which was that it was not valuable for experienced healthcare managers to complete the same training repeatedly. Participants stated that experienced healthcare managers should have options for advanced topics, which they defined as topics where information evolves including areas like regulatory standards, as well as

leadership skills development and options for more in-depth training on healthcare specific topics, such as healthcare specific ICS operations and patient evacuation.

When asked whether there were topics that should be covered more frequently, participants stated ICS and exercising should be completed a minimum of annually.

Barriers and Overcoming Barriers

Focus group participants were then asked about barriers to adopting a training standard for healthcare emergency managers. Themes across all groups were financial barriers (mentioned 18 times) and time to attend training:

"*Time and money*." (Focus Group Participant)

Leadership knowledge barriers were also mentioned:

"I think you're absolutely right about needing to speak the language of the C-suite. I always think of myself as the emergency management horse whisperer, that I am not in a position of authority, but I can whisper to the people that are in a position of authority. And nudge them in various directions. But unless you're speaking their language, they won't hear you" (Focus Group Participant).

In discussing overcoming these barriers, participant responses included 1) working with healthcare coalitions to help with funding and low or no cost training, 2) educating leadership to help garner support for funding training and the need for training, and 3) offering hybrid training to minimize the time healthcare emergency managers need to be away from their organization. Having hybrid training options, which the groups defined as a mix of in-person and synchronous online training, was mentioned twenty times.

An additional idea mentioned in one group was to require language specifying the amount and type of training either in policy, regulations or in job descriptions so there would be additional traction to support a minimum amount of training for healthcare emergency managers. Several participants suggested demonstrating savings or cost avoidance from having effective emergency preparedness. One participant discussed the idea of the hospital acting as a community convener for other healthcare or public health responders to receive emergency preparedness training which may generate goodwill in the community and thereby garner leadership support. Yet another participant recommended increasing awareness of emergency preparedness at the national level by presenting at healthcare leadership conferences such as the American College of Healthcare Executives (ACHE), and the American Hospital Association (AHA) on a variety of healthcare emergency preparedness topics.

Some additional ideas, while outside of the scope of this study, arose from the focus groups that are important to note. Establishing training requirements for healthcare leaders and front-line healthcare workers and providers was mentioned seventeen times across the all the focus groups. One participant mentioned that they wished there was a regulatory requirement for a minimum amount of annual hands-on training that all people working in healthcare had to take every year.

Many participants indicated a need for a standardized job description for healthcare emergency managers. Participants explained emergency managers are often charged with multiple roles and responsibilities and felt standardized emergency management job descriptions would promote having dedicated resources to emergency

management in healthcare as well as standardize the competency emergency managers need to have.

Related to this idea of standardized job roles was the suggestion from one group that we need minimum full time equivalent (FTE) standards for healthcare enforced by regulatory means. Meaning, hospitals or healthcare systems would need to have a certain number of dedicated emergency preparedness managers based on their organizations size.

Several groups suggested a requirement that healthcare emergency managers become certified within a certain amount of time so there is a level of standardized competency in the field versus the variability among healthcare emergency professionals currently. Several participants mentioned that this requirement for certification could be built from the training standard. Meaning, new healthcare emergency managers would have three years to complete the minimum training outlined by the standard and that this would then also help them qualify for the requirements needed to pursue certification.

An idea proposed by one participant was to require healthcare academic programs (e.g., medical schools, nursing schools, ancillary professions schools, healthcare administration programs, etc.) to require some healthcare emergency preparedness training in their curriculums.

Discussion

Training Topics

In the survey, only two respondents (3%) answered the question about additional topics that should be included in a standard. This could indicate the majority of survey participants found the ten training topic categories they were asked about to be comprehensive, which was confirmed by the responses received in the focus groups. The focus groups agreed the ten training topics were appropriate for a basic training standard with the recommendation that the topic of ICS include ICS operations as a part of the training topic definition and scope.

The focus groups in the qualitative phase helped to clarify and deepen understanding of the data produced in the quantitative phase and resulted in a key concept for development of a training standard. A major theme in all groups and across several questions was that while participants were supportive of a training standard, there should be a basic or initial standard for people new to the field and then a different requirement for ongoing training for healthcare emergency preparedness professionals who had more experience. This recommendation to focus the training standard on those new to the field was a significant development in the study and a main consideration in developing the plan for change which is outlined in Chapter 5.

Further, this ongoing training for experienced professionals should not be a repeat of the basic training standard but rather focused on topics that are (1) advanced topics which the participants defined as areas where information is subject to updates, such as regulatory standards and topics such as leadership skills development and (2) more options for healthcare specific training such as healthcare ICS operations and

patient/facility evacuation. There are options for experienced emergency preparedness professionals to attend some of this training currently through organizations including AHEPP and FEMA. However, training for topics like regulatory updates in healthcare emergency preparedness and leadership skills development specific to experienced healthcare emergency managers is a recommendation that will be provided to AHEPP.

While there is a lack of research on recommended training topics in healthcare emergency preparedness, AHEPP has outlined competencies for healthcare emergency preparedness professionals which can align to the concept of a basic training standard. This is further explored in the plan for change in Chapter 5. AHEPP has also launched a three-level certification process which can align to the desire for advanced options for experienced healthcare emergency managers outlined by the focus groups and is further explored in Chapter 6.

Quantity and Frequency of Training

The literature review conducted for this study produced no sources recommending a minimum number of hours of training or training frequency in healthcare emergency preparedness. In the findings for training hours, eleven hours or more for a given topic was considered sufficient by most survey respondents. Very few respondents indicated that sixteen hours or more on a given topic was considered insufficient. This indicates survey respondents believed that eleven or more hours on a given topic would be an appropriate quantity of training at the basic level. The focus groups added further clarity to quantity of training. Focus group participants felt exercising, specifically, should be covered for more than eleven hours and that exercising and ICS, which seemed to be

considered the heart of the emergency manager role, should be covered annually. These recommendations informed the development of the training standard with ICS operations and exercising recommended for annual training and the other eight training topics spread over the three-year time period. Responses received about quantity of training, including that more time needed to be devoted to exercising was valuable to further inform which specific requirements should be included in the training standard.

Another consideration important to note was the variability in experience respondents represented. Future research should explore the impact of years of experience on perceptions around needed quantities of training. People with less experience in the field may respond with a need for higher quantities of training while those with more experience may respond that fewer hours of training are sufficient. However, one of the goals of the study was to include a wide range of emergency preparedness professionals, including a wide variety of experience. This planned approach led to a valuable recommendation from the focus group participants, which was to recommend a basic standard for those new to the field and a different requirement for experienced healthcare managers. Therefore, this consideration, while important to note, was a benefit to the study.

Delivery Format and Other Factors in Training

In-person training (as opposed to online-synchronous or online-asynchronous) was strongly preferred on all but three topics in both the survey and focus group participants. Topics where in-person training was preferred were ICS, conducting a hazard vulnerability analysis (HVA), exercise design/ exercising your plan, risk

communications (internal and external), facilitation (convening partners for collaboration), healthcare surge (trauma-based and ID-based), and healthcare evacuation. Based on other recommendations shared by the focus groups, these are the topics where participants felt interactive style training was important in order for the training to be valuable. These delivery format preferences are reflected in the training standard recommendation outlined in Chapter 5.

Participants in the survey preferred synchronous online training for writing emergency preparedness plans, business continuity and hazard vulnerability assessments. These recommendations seemed to be supported by the focus group participants and their recommendations took understanding training development one step further by recommending people preparing training consider how to incorporate hybrid training where possible. Hybrid training was defined by participants as augmenting in-person training with online synchronous training. These three topics do not usually require an interactive or hands-on aspect which may be why respondents were more willing to participate online for these training activities.

A challenge of the study specific to the collection of data around training format was that some survey participants selected multiple answers in the format preferred section. This may indicate subject willingness to participate in different training formats or even hybrid-style training. This was further clarified in the qualitative phase by discussing this with the focus groups because while in-person training was strongly preferred for most topics, they encouraged incorporating hybrid training, as defined above. Future research could include comparing delivery formats on specific content,

rather than on a general topic, in healthcare emergency preparedness to determine which delivery formats are most successful.

The data also showed participants did not prefer online asynchronous delivery for training on any of the ten training topic categories. This aligns with focus group feedback about the importance of interacting with others in emergency preparedness training in order to perceive the training as effective. These results may also relate to the potential increased ability to retain information when training is conducted synchronously. Yadav, et al. compared asynchronous and synchronous online teaching methods and found participants' clarity in understanding concepts and examination scores after synchronous online teaching were significantly higher than those for topics covered through the asynchronous method (2021). Another study comparing delivery formats found participants' performance dropped in an asynchronous online course compared to an equivalent in-person experience (Jensen, et al., 2022).

Future research specifically on healthcare emergency preparedness training topics could deepen our understanding of ideal delivery formats for the profession. Optimal delivery formats may also evolve as online delivery formats expand and become more interactive and options for online preparedness and response simulation continues to advance.

The isolation many experienced during the pandemic and a desire to participate synchronously in training, whether it be in-person or online may also be driving a desire for interactive training. Hoofman & Secord studied the effect of COVID-19 on education and among their results, found adults in graduate medical programs strongly preferred the ability to interact with their peers and that lack of interaction negatively impacted ability

to learn as well as had the potential to negatively impact ability to perform certain job responsibilities as students became practicing physicians (2021).

There is a lack of existing literature on delivery formats specific to emergency preparedness, however one source was found that studied overall training effectiveness by delivery format in emergency preparedness. Salerno, et al. conducted a survey of Public Health Emergency Preparedness Cooperative Agreement recipients and local health departments and found participants rated "participatory workshops" and "participatory drills" as high utility as compared to online training, lectures, or individual study programs. The authors found there was a clear preference for participatory learning. They also noted small local health departments seemed to prefer options for distance learning which was one exception to the trends in their results and recommended entities developing training offer hybrid approaches to meet the needs of all participants (Salerno, et al., 2021). The recommendation from this study to prioritize in-person training but consider options for offering hybrid training supports the findings on delivery format from the study we conducted.

Focus group responses about training delivery formats aligned with the quantitative data. Focus groups were able to expound on why in-person training or as an alternate option, online synchronous training is preferred. The interactive nature of these delivery formats was key to participants finding in-person and online synchronous training valuable and applicable. Offering hybrid options, as defined above, was also a key finding in the qualitative survey.

Barriers and Overcoming Barriers

The responses about barriers to adopting a training standard, while anticipated, helped to frame the discussion around how to overcome said barriers. The above referenced study by Salerno, et al. (2021) found time and limited financial support to attend training were the largest barriers, which matches the findings from this study.

Additional discussion and references about cost savings or cost avoidance by focusing on improved healthcare emergency preparedness is included in Chapter 6 as a part of the plan to enable adoption. Related to the idea respondents provided about the hospital acting as a community convener for training, non-profit hospitals must meet a certain amount of community benefit to maintain their non-profit tax status (Zare & Anderson, 2021). Providing emergency preparedness training may be a way to meet these requirements since there is a service value to the community as well as the other benefits gleaned from community collaboration for preparedness.

The groups also recommended acting at a national policy level to include training requirements in regulatory standards, which is a key part of the plan for change in this dissertation and further discussed in the next chapter. Participants also recommended advocating for healthcare emergency preparedness by presenting about a variety of healthcare emergency preparedness topics at national leadership conferences such as ACHE and AHA, which is a key part of the dissemination plan for this research.

Out of Current Scope

Some valuable ideas were shared in the focus groups that are outside of the scope of this study. Future areas of research should include an understanding of gaps in healthcare leader training in emergency preparedness. Based on the discussion in the focus groups, areas of an initial focus for leader training might include leading ICS and ICS operations and the role leaders need to play in their team's resiliency. A requirement for a minimum amount of preparedness training for leaders might also help with gaining C-level support for emergency preparedness programs and training, which is a key to advancing healthcare emergency preparedness. Leadership support is an important enabler to adoption and is further discussed in Chapter 6.

Along the same line of feedback, exploring an annual training requirement for front-line healthcare workers and providers is also a recommendation for future research. Research could also include how to address training in healthcare emergency preparedness while healthcare professionals are in their academic training. Many healthcare professionals graduate knowing very little about emergency preparedness. This statement is supported by resources including the "Committee on the Future of Nursing 2020-2030" report as well as the American College of Emergency Physicians in their article, "Lessons Learned from Hurricane Sandy and Recommendations for Improved Healthcare and Public Health Response and Recovery for Future Catastrophic Events". Incorporating preparedness training while healthcare professionals are still in school would be one way to improve overall healthcare preparedness.

Standardizing job descriptions for healthcare emergency preparedness professionals and researching and recommending minimum FTEs of dedicated

emergency preparedness professionals in healthcare environments are both important recommendations raised by the focus group participants. While these topics are outside of the scope of this study, they are important areas of future research and have been provided to AHEPP for additional consideration.

Chapter 5: The Plan for Change (e.g., Implementation Plan)

Plan for change

The paper includes recommendations based on the research findings and proposing a plan for change. For this study, the plan for change involves developing and promoting adoption of a standard for training in healthcare emergency preparedness. The plan for change is reliant on influencing and engaging multiple stakeholders and considers motivation and barriers to adopting the recommendation. Stakeholders are considered those who hold leadership roles in healthcare facilities/systems, industry groups such as AHEPP, ACHE and AHA, accrediting bodies such as the Joint Commission (JC) as well as national policymakers, specifically at the Centers for Medicare & Medicaid Services (CMS). These stakeholders are all key to executing a successful and comprehensive plan for change. Through partnership with subject matter experts at AHEPP and in the healthcare emergency preparedness field, this dissertation makes a recommendation on a training standard for emergency preparedness professionals in the hospital environment.

The recommended training standard is comprehensive and inclusive of recommended topics, target audience, delivery format and time needed to complete the basic requirements. The training standard target audience is persons new to the field of healthcare emergency preparedness working in hospital environments, defined for purposes of this recommendation as those with zero to five years of experience in the field. The training outlined should be completed within three years, ideally beginning upon entry into the field. Incident Command Systems (ICS), including ICS operations and exercising were identified as high priority in the focus groups and are recommended

to be completed annually for a minimum of eleven hours each, for a total of a minimum of twenty-two hours annually or sixty-six hours on these two training topics by the end of the three-year training period. While this is the minimum amount of training recommended, ideally, healthcare emergency managers would exceed this number as these two topics are viewed by the subject matter experts in the focus groups as core to the success of new healthcare emergency managers.

Other training areas which need to be completed in the three-year period, each for a minimum of eleven hours are: conducting a hazard vulnerability analysis (HVA); writing an emergency preparedness plan; risk communications (internal and external);Facilitation (convening partners for collaboration); healthcare surge (trauma-based and ID-based); healthcare evacuation; business continuity; and other specialized responses tailored to the facility and/or role which can include radiation exposure, chemical exposure, and active shooter.

Other aspects of training, including the format of delivery, were identified in the study to be essential components to consider in addition to quantity. Hands-on, interactive training was highly valued by the subject matter experts surveyed and these elements would be especially important for those new to the field. Interactive training in healthcare emergency preparedness is primarily accomplished by exercising. Exercising is valuable due to the aspect of being able to physically practice skills such as patient evacuation which is difficult to simulate in online delivery formats. Due to the findings of this study regarding which topic categories were preferred for in-person delivery and the expressed value of interaction for certain topics, it is recommended that training on the topics of ICS, conducting a hazard vulnerability analysis (HVA), exercise design/

exercising, risk communications (internal and external), facilitation (convening partners for collaboration), healthcare surge (trauma-based and ID-based), and healthcare evacuation be completed in person. Topics that can be completed synchronously online or in a hybrid online/in-person format are writing an emergency preparedness plan, business continuity, and other specialized responses. The training standard is also outlined in a guideline format in Appendix A.

Online asynchronous training can be used to supplement in-person training and is encouraged to prepare new healthcare emergency managers for the interactive training outlined above. This hybrid style training is a strategy for ensuring training is not just high quality but also attainable for the number of hours needed to complete the basic training standard. Ideally, asynchronous training should not be counted in the recommended total training hours, as the findings in the study indicate it is not preferred as compared to synchronous training formats. As a reference for online asynchronous training, a self-study list was prepared in partnership with and provided to AHEPP. It was compiled in 2023 as a resource for new healthcare emergency managers and can be used to supplement and prepare for in-person and hybrid training. This list is provided in Appendix B.

Finally, this training standard serves as a recommendation for those new to the field of healthcare emergency preparedness and needs to evolve as the field continues to evolve. It is recommended that AHEPP be the professional organization overseeing the process of updating the training standard. AHEPP already has a committee focused on updating professional competencies which could convene every five years to review the

training standard and recommend changes as well as ensure the training standard reflects the updated healthcare emergency preparedness competencies.

Implementing the Plan for Change

Implementing the plan for change requires action at the national policy level. CMS is the government entity that would need to incorporate the training standard into the existing regulations for hospitals. CMS was chosen as the focus for driving this change because CMS holds the national policymaking role for healthcare entities. CMS creates and updates national regulations to guide providers and suppliers in healthcare delivery. Regulations enforced by CMS in the healthcare delivery environment span topics from patient privacy to payment to emergency preparedness (CMS, 2023).

Regulations specific to healthcare emergency preparedness are included in the "Emergency Preparedness Requirements for Medicare and Medicaid Participating Providers and Suppliers" docket, docket number CMS-2013-0269 (CMS, 2023). Specific existing requirements for healthcare emergency preparedness for the 17 provider and supplier types, including hospitals, are outlined in Appendix Z. Appendix Z is the CMS State Operations Manual titled "Emergency Preparedness for All Provider and Certified Supplier Types" (CMS, 2021). The recommended implementation plan is to meet with CMS to request the training standard be incorporated into Appendix Z to clarify and standardize the training required for healthcare emergency managers operating in hospital environments. Leadership approach, negotiation strategy, stakeholders and action steps are outlined in the remainder of this chapter.

Surveying hospitals for compliance on the regulations established by CMS can be accomplished by state level entities or by national accrediting bodies. The Joint Commission (JC) is the most common national surveyor in U.S. healthcare and is a designated surveyor for CMS, which means they can survey healthcare facilities on the regulations developed by CMS on behalf of CMS (called "deemed status"). While participating in the survey is voluntary, healthcare facilities cannot receive federal payment from Medicare or Medicaid programs without demonstrating they meet the government requirements for program participation outlined in federal regulations (The Joint Commission, Deemed Status Fact Sheet, 2024). The JC is mentioned here as the JC is the largest and most common national surveyor for U.S. hospitals. JC surveyors are made aware of changes to CMS regulations so they can survey according to the most current regulations, but the JC does not hold policymaking authority (The Joint Commission, 2024).

Although the JC is important to mention because of the surveyor role mentioned above, CMS is the body who holds the power to develop and change regulations in U.S. hospitals and this is the reason they were chosen for implementing the plan of change.

Leadership approach must be considered in order to successfully influence CMS to make this change. While several different leadership theories for guiding leadership approach might be appropriate, the primary leadership theory for this plan of change is transformational leadership theory. Transformational leadership theory is often adopted when accomplishing change is reliant on inspiring or influencing others rather than directing the change. Further, transformational leadership attempts to motivate the target audience by focusing on standards, values, ethics and larger-scale, aspirational impacts

such as the health and safety of an organization or even a population (Northouse, 2022). Some resources state the opposite of transformational leadership is transactional leadership. Transactional leadership is characterized by setting clear expectations, motivating through using an incentives framework, includes an intense focus on results and uses a directing or "telling" style. In addition, where transformational leadership theory incorporates stories, transactional leadership theory tends to focus on data, findings, and figures. Both of these styles are relationship-based approaches (Ledlow & Stephens, 2018). Other sources state transformational and transactional leadership theories are not opposites and can be used successfully together in an approached called the Active Situational Leadership Theory. In this leadership approach, the leader is constantly reading the situation and audience response and applies a mix of transactional and transformational leadership to achieve the desired outcome. While Active Situational Leadership may be valuable to apply, the transformational leadership approach is recommended as the primary approach with CMS. Transformational leaders inspire action with one or more of the following three key strategies. They create awareness of the importance of their request, sacrifice their own self-interest for the greater good, and motivate followers with addressing "higher order needs" (Ledlow & Stephens, 2018, p. 278). Maslow's hierarchy of needs identifies higher order needs as belongingness, esteem and self-actualization. Policy makers are often motivated to serve in their roles by one or more of these higher order needs. Therefore, strategically aligning with higher order needs to motivate action should be a component of the approach with CMS. Understanding and engaging the audience in higher order needs is a key way leaders

applying transformational style inspire the target audience to act on their requests (Olden & Erwin, 2023).

Two of the transformational leadership theory strategies outlined above can be applied in the plan for change with CMS by (1) making CMS policy makers aware of the importance of this plan of change to the health and safety of the public and (2) demonstrating how incorporating the change can serve the greater good, in this instance, the improved safety of the public. These strategies also appeal to the personal values and ethics of the CMS policymakers, which incorporates higher order needs and uses influence and inspiration to drive change that are hallmarks of the transformational leadership approach (Olden & Erwin, 2023).

Concepts of power, motivation, and change management, which lead to negotiation strategies are also applicable. Both personal and positional power need to be considered as misunderstanding personal or positional power can cause a breakdown in communication and ultimately, negotiation. Positional power would not apply in this case because the ability to use a position to direct action does not exist. However, personal power does apply. There are four types of personal power: (1) the power to reward; (2) coercive power; (3) the power of expertise and (4) referent power. Using expert power, which is providing needed knowledge, skills or abilities, is the most appropriate power to apply in this case and in advocating for policy change (Olden & Erwin, 2023). In advocating for policy change, it is important to understand that “as the level of advocacy increases, a leaders formal power decreases.” Further, “as advocacy targets elevate to industry and governmental levels, healthcare leaders rely more heavily on expert power” (Ledlow & Stephens, 2018, p. 1549).

In reviewing motivational theories, Herzberg's two factor theory is simplified to be "great work is its own reward". This motivational theory aligns with the transformational leadership strategies, including appealing to the higher order needs, personal values, and ethics of the CMS policymakers, and by leveraging influence, rather than direct orders, to drive change (Olden & Erwin, 2023).

Rowland, et al., studied the most successful methods for leading change and outlined four main approaches. They state, "In four rounds of research across two decades, we've found that the two change approaches most present in successful, high-magnitude change are masterful and emergent" (2023, n.p.). Masterful change strategy is reliant on being able to direct rather than influence change. This study has established in previous paragraphs that there is no direct influence on CMS, thereby eliminating this change approach. In contrast, the emergent approach combines the topics described above (leadership, motivation, and personal power). The emergent change approach is most appropriate for this project because the change to include a training standard in existing policy is systemic, and the change leader must rely on influence rather than being able to direct or demand change. In emergent change, the leader mindset is, "I can only create the conditions for change." which is appropriate for this strategy (Rowland, et al., 2023).

Specific procedural options for driving this policy change at CMS, escalating in effort, are now considered. In reviewing the CMS policymaking process, there is procedure for soliciting public comments for newly proposed regulations or as existing final regulations open for review. Once a regulation is final, there is no opportunity to provide comment via this format until the regulation in question is re-opened for

comment. Regulations currently open for comment can be found on the e-rulemaking website at regulations.gov. In reviewing this website in April 2024, no regulations covering emergency preparedness in healthcare were open for comment (CMS, 2023).

Next, the process for subscribing to a CMS rule in order to track and comment once the comment period is opened was researched. This is accomplished on the e-rulemaking website by subscribing to the docket number. The "Emergency Preparedness Requirements for Medicare and Medicaid Participating Providers and Suppliers" which includes hospitals, is docket number CMS-2013-0269 (CMS, 2023). The author has subscribed to this docket. A recommendation to successfully implement this plan of change and future plans of change related to healthcare emergency preparedness regulations is to subscribe to and actively comment, while the comment period is open, on this docket. This recommendation was provided to the sponsor organization for this dissertation, AHEPP, as this professional organization represents the field of healthcare emergency preparedness and frequently acts at the policy level to drive change.

While these are valid options for advocating for policy change, they are passive, and the impact would not be realized in the near term. Therefore, an active and immediate term strategy of meeting with CMS policymakers to influence them to make the policy change by incorporating the training standard is recommended. The partner organization for this dissertation, AHEPP, and specifically, AHEPP leaders have existing contacts at CMS. It is recommended AHEPP leadership, and the author meet with CMS to provide the recommendation of this training standard and the request that the standard be incorporated into existing regulations. We would meet with the Heath Insurance Specialist, Program Lead for Emergency Preparedness and OPT at CMS in order to

request adoption of the training standard into existing CMS regulation. There are many potential routes for incorporating the training standard into existing regulation, and ultimately how to incorporate it would be the decision of CMS leadership, however, a specific regulation where the training standard could be incorporated is Appendix Z and this option would be included in our recommendation to CMS. Appendix Z is the CMS State Operations Manual titled “Emergency Preparedness for All Provider and Certified Supplier Types.” In reviewing previous changes to Appendix Z, another route to enact this plan of change at the national policy level would be to meet with the Director of the Quality, Safety & Oversight Group (CMS, 2021). When contacting CMS to request a meeting, the Director of Quality, Safety & Oversight will also be invited because this role has direct oversight of changes to Appendix Z. Precedence has been set by CMS for making changes and updates to Appendix Z, most recently in 2021. Changes were made to Appendix Z partly to reflect the impact emerging infectious diseases, including COVID-19, had on healthcare emergency preparedness (CMS, 2021). Incorporating the training standard to add specificity to the already existing, but ambiguous, regulation on training in healthcare environments outlined in Appendix Z would be an effective and efficient adoption for this plan of change.

To prepare for the meeting, AHEPP leadership and others presenting, henceforth referred to as "the presenters” should also become familiar with the CMS Strategic Plan because commitments made in the strategic plan can be aligned with the request to include the training standard in Appendix Z. This is one example of how the transformational leadership theory can be applied to influence, motivate and inspire change (Olden & Erwin, 2023). In reviewing the CMS strategic plan, key areas of

alignment are noted in improving the overall health and safety of the public and advancing health equity (CMS, CMS Strategic Plan, 2024). The literature review component of the dissertation can be used to present information about how incorporating the training standard achieves these two goals. In addition, a pillar of the CMS strategic plan is to engage partners in the policymaking and implementation process (CMS, CMS Strategic Plan, 2024). This is another area of goal alignment because we are offering long-term partnership in policymaking and for the implementation of the training standard.

In the presentation preparation stage, the presenters will ground themselves in the transformational leadership strategies outlined above to (1) make CMS policy makers aware of the importance of this plan of change to the health and safety of the public which can be tightly aligned with the CMS Strategic Plan and (2) demonstrate how incorporating the change can serve the greater good, in this instance, the improved safety of the public, which again, tightly aligns with the CMS Strategic Plan.

The presentation to CMS would include background information collected through the literature review as well as the data and findings collected in this study. Here, the presenters will apply Active Situational Leadership Theory, which mixes in Transactional Leadership Theory by focusing on data, findings and figures leading to very clear requests for action (Ledlow & Stephens, 2018).

Moving from concept and application of leadership theory approach to a specific outline for the meeting with CMS, the presentation would entail:

1. Introductions
    a. Relationship building
    b. Role Clarity
    c. Offer of long-term partnership in alignment with the CMS strategic pillar
2. Background
    a. Stories of disasters and disaster recovery
        i. Examples of how training improved disaster response and mitigated the impact of disasters
    b. Facts about disasters
        i. Department of Homeland Security Timeline
        ii. Increasing frequency and magnitude of disasters
        iii. Costs of disasters
        iv. Variability in healthcare preparedness
            1. Need for a standard in training
3. Impact to the Public
    a. Examples of impacts to public health and safety
        i. Demonstrate how the training standard aligns with the CMS Strategic Plan to improve public health and safety
    b. Examples of how disasters impact health equity
        i. Demonstrate how the training standard aligns with the CMS Strategic Plan to improve health equity

4. Data and Findings
    a. Present overall study results
    b. Discuss how a Training Standard can decrease variability in preparedness
    c. Discuss how the study informed development of the training standard
5. The Training Standard
6. Request to add the Training Standard to existing CMS Policy
    a. Recommend adding the Training Standard to specifically to Appendix Z
    b. Discuss why change at the policy level is the most effective option for implementing the plan for change
7. Discuss barriers to implementation
    a. Costs
        i. Demonstrate the cost mitigation opportunity with improved preparedness
        ii. Request advice and support to engage the appropriate officials at the national level (including ASPR) to discuss increased funding
8. Clear outline on next steps
    a. Any additional information needed to make the change
    b. Need for additional meetings
    c. Negotiate timeline for incorporating the Training Standard

The presenters would debrief following the meeting and determine next steps based on what was learned in the meeting to ensure the change moves forward.

In addition to meeting with CMS, the American Hospital Association (AHA) should also be engaged by AHEPP leadership and the author because the training standard is focused on hospitals and AHA represents U.S. hospitals as a professional organization. Ms. Florence Di Benedetto, Dissertation Committee Member, has long standing relationships in AHA and has agreed to engage the AHA to support the recommendation to incorporate this training standard in existing regulations. The AHA has lobbied CMS on various decisions and regulations impacting U.S. hospitals and can be a valuable partner in implementing the plan for change. In thinking of the leadership approach, including theories of power, influence, negotiation and motivation, it is recommended that the presenters meet with CMS first, gauge the response of CMS, and then determine if a direct approach from AHA to CMS, either with or without the presenters attending, as a follow up to the initial meeting would be valuable to moving the plan of change forward. This evaluation of audiences and information and adjusting leadership approach is an example of applying Active Situational Leadership Theory (Ledlow & Stephens, 2018).

Regardless of whether AHA is involved with the effort at CMS to incorporate the plan of change, they are valuable to involve in the implementation phase which ultimately includes adoption of the training standard at the industry and hospital level. One of the key concerns from AHA's perspective will be the cost this involves at the hospital level. Therefore, planning the approach to partner with the AHA to advocate for increased funding through the Hospital Preparedness Program (HPP) is a key part of the implementation plan and the primary reason for meeting with the AHA. Similar to the leadership approach for meeting with CMS, the Transformational Leadership Theory

should be the primary approach applied due to the need to rely on influence and appealing to the higher order needs of leaders at AHA (Ledlow & Stephens, 2018).

The main resources required for implementing this plan of change are (1) the social capital of Ms. Di Benedetto and AHEPP leadership to engage the contacts at CMS and AHA outlined above and (2) a time investment of Ms. Di Benedetto, AHEPP leadership and the author to meet with the aforementioned contacts. Social capital "involves the potential of individuals to secure benefits and invent solutions to problems through membership in social networks" (Poteyeva, 2024, n.p.). Using social capital is dependent on leveraging existing relationships and the trust established in those relationships to influence action. Social capital is commonly applied in driving policy change. The primary benefit of applying social capital in presenting policy changes is that it increases the likelihood that the requested action(s) will occur (Poteyeva, 2024). In this case, we are leveraging social capital to (1) gain a meeting with CMS and AHA and (2) strengthen the likelihood that stakeholders at CMS and AHA will take action on our requests.

While additional resources, such as staffing or funding, are not required to implement the plan of change at the policy level, there are challenges, specifically funding and industry leader buy-in, to the actual implementation of this plan of change at the hospital level. Adoption of the plan for change is therefore further considered from a hospital lens in the subsequent section.

Enablers and challenges

There are several enablers and challenges to consider in adoption of this plan for change at the hospital facility level. In response to the COVID-19 pandemic, CMS conducted a study involving thirty healthcare provider entities across ten different states and found several enablers and challenges to consider in preparing for future public health emergencies. Among the enablers were leadership, culture; training and testing; staff resilience; and local planning and coordination. (Blackstock, et al., 2022). In considering these findings, it is important to understand that the absence of a key enabler is in itself a challenge. In reviewing the key enablers outlined here, the two this plan for change has an opportunity to influence are leadership and training.

While lack of funding was not noted as a key challenge in the CMS study, several other articles, as well as the results of this study, highlight financial support as a key barrier to effective emergency preparedness, including adopting a training standard. Biddinger, et al. studied emergency preparedness capabilities in academic health systems in the U.S. and found challenges included having enough programmatic resources, specifically, dedicated emergency preparedness personnel and budgetary support (2018). Vick, et al. surveyed hospitals across the state of New York and found that less than half reported being "satisfied" or "very satisfied" with the level of funding that they received from the HPP. In addition, eighty eight percent (88 %) of respondents stated there were barriers to improved emergency preparedness, including funding (2018). It is important to note here, Hospital Preparedness Program appropriations have been cut almost in half from $515 million in 2003 to $280 million in 2021, or over 62 percent when accounting for inflation (Trust for America's Health, 2023). As mentioned earlier, the only current

mechanism to increase federal funding for hospitals and other healthcare facilities for emergency preparedness is through the Hospital Preparedness Program. Therefore, the strategy to increase federal funding is to partner with the AHA to meet with ASPR and request increased funding. The leadership approach, preparation and proposed strategies to achieve increased funding are outlined further below.

As discovered in this study and as highlighted in these resources, leadership plays an important role in healthcare emergency preparedness. A need for greater leadership education and support was a key issue identified in this study. Working with professional organizations including AHA and ACHE to reach leaders to educate them about the importance of leadership accountability is a cornerstone of the implementation plan.

Leadership can also be a powerful enabler to advocate for increased funding for healthcare preparedness as well as champion efforts to improve healthcare preparedness overall through programmatic support. In an article about leadership lessons in national emergencies for the American College of Healthcare Executive's *Journal of Healthcare Management*, the author highlighted the importance of leadership accountability for programmatic support, training and care of the workforce (Hofmann, 2020). In another article from ACHE's Journal *of Healthcare Management*, Minnier & Amy discuss their hospitals preparedness for COVID-19 and claim, "clear leadership is vital" (2021, p. 18). The American College of Healthcare Executives released a policy statement in November of 2020 outlining the role of leadership in disaster preparedness and management. Included in the statement was the need to develop and ensure support and maintenance of a comprehensive emergency management program including supporting the time and financial investments needed for "training and exercises." Also discussed was the need to

plan for continuity of operations, collaboration with partners at local, regional and national levels, and ensuring the safety of staff, patients and families, all of which can be improved with an ongoing commitment to training and advocating for financial support. The approach to increase this commitment in healthcare leadership is founded in the transformational leadership approach, appealing to the values and ethics of leaders, including the opportunity leaders have to improve the good of many by adopting the training standard (Ledlow & Stephens, 2018). This call to action can be delivered at conferences hospital leaders attend and is included in the implementation plan.

It is critical to keep the barriers to training in healthcare emergency preparedness at the hospital level front of mind. According to an article by David Levine, writing for *U.S. News and World Report*, the pressures facing healthcare have never been greater, including wildfires, floods, and most recently, a global pandemic, which makes preparedness more essential than ever. These events also create financial pressure. It is important to consider how some of these financial pressures might be overcome. Levine argues one way is to include emergency management professionals more deeply in strategic and financial planning to manage future disasters and mitigate the human and financial impacts (2021). There is also strong evidence a more prepared hospital conserves financial resources and responses to disasters costs more when healthcare systems are less prepared. Therefore, outlining the value equation in implementing standards in healthcare emergency preparedness is a driver for adoption at the hospital level. The value equation here is not just financial, but understanding the return on investment in improved preparedness can further enable adoption. In their article on the evolution of emergency preparedness in hospitals, Medcalf, S., et al. discussed many

important points including the need to demonstrate how training for emergency preparedness can also improve overall hospital operations in the face of declining funding and financial pressures. The authors stressed how improved emergency preparedness can lead to outcomes such as improved infection control and cost savings due to improved management of disasters (2020).

Gribben, et al. surveyed Chief Executive Officers in hospitals in Nebraska about the financial benefits of hospital emergency preparedness activities to hospital operations and found most participants felt staff training in emergency preparedness, drills and exercises created a positive impact to daily operations. Survey respondents also indicated a plan to continue to invest in emergency preparedness over the next three years, which the authors felt indicated a strong commitment to investing in emergency preparedness, even in light of the financial pressures (2020).

In a 2017 case study, Rogers, et al. reviewed the utilization of the emergency operations plan and incident command structure at a level two trauma center to mitigate the impact caused by the unexpected and sudden loss of infrastructure including air conditioning and ventilation in the hospital's operating rooms. They stated the team involved trained together extensively and the training and execution of the plan resulted in a faster return to safe, normal operations. Considering the mean cost of operating room time in the United States is estimated to be $46.04 per minute, returning to normal operations safely but quickly becomes a both a priority as well as a cost avoidance strategy (Smith, et al., 2022). Demonstrating cost savings from improved emergency preparedness can enable adoption of the training standard at the hospital level.

Presenting at AHA and ACHE conferences on how training improves healthcare emergency preparedness will enlist the support of AHA and ACHE to encourage local hospital leadership to endorse more training and adopt the training standard. This partnership also gives professional organizations including AHA and ACHE an opportunity to be more directly involved in education on emergency preparedness, as called for by members of different healthcare professions post-pandemic (Emigh, et al., 2023). In addition, working with AHA to meet with ASPR to influence ASPR to increase HPP funding will also engage local hospital leaders by demonstrating AHEPP's and AHA's commitment to supporting them through advocating for increased funding. Increasing funding will directly enable adoption of the training standard and improve financial support to local hospitals for preparedness efforts. This approach is an example of applying expertise power (Olden & Erwin, 2023) and emergent change management (Rowland, et al.,2023).

Advocating for improved and sustained government funding is an important enabler at the industry level. In a study by Roy, S., et al., the authors outline findings from interviews with senior hospital leaders in the state of Nebraska. They state senior hospital leaders' value emergency preparedness but are sensitive to financial pressures and the decline in government funding. The authors also highlight the influence of regulatory requirements on hospital leadership decision-making processes, including investment in emergency preparedness activities. The authors found staff training was one of the three investment priorities for study participants. The authors also highlighted the availability of funding as an enabler in healthcare emergency preparedness activities, including training (2020). There are several important points here that align with the

findings of this study as well as implementing the plan for change. (1) Training is a key component of improved emergency preparedness (2) Hospitals are under financial pressure and (3) Decision making is impacted by regulatory requirements. To be most successful in implementing the training standard, both regulatory changes and improved federal funding for hospital preparedness must be addressed.

Advocating for funding for emergency preparedness in hospitals is one of the many activities of the American Hospital Association. The hospital preparedness program (HPP) launched in 2002 with the goal to help improve the U.S. healthcare system response to emergencies. HPP is administered through the Administration for Strategic Preparedness and Response (ASPR) and is the only source of federal funding for health care system preparedness. ASPR is an operating arm of the U.S. Department of Health and Human Services and is charged with leading health care and public health emergency preparedness. (ASPR, 2022). Advocating for additional funding for hospitals through this existing mechanism of federal funding will result in near term results as compared to advocating for new federal funding sources. Advocating for additional funding through the HPP also aligns with AHA's existing plan for increased funding for healthcare emergency preparedness. The American Hospital Association (AHA) recently commented on draft legislation, urging Congress to at least double the currently proposed $385 million in funding for HPP over the next five years (2023). Partnering with the AHA to meet with ASPR to advocate for the increased funding needed to support a training standard at the hospital level is a main component of enabling adoption. While the AHA has encouraged ASPR to increase funding to hospitals, additional steps are needed to effect change, including partnership with ASPR to influence action at the

national level. As recommended for the preparation required to meet with CMS, leadership theory to guide the leadership approach for meeting with ASPR must be considered. In addition, considerations about influence, negotiation, motivation and change management need to be incorporated for the meeting with ASPR. The Transformational Leadership Theory should be the primary approach applied due to the need to rely on influence rather than direction and to appeal to ASPR on the shared goal of improving healthcare emergency preparedness. The emergent change approach is also applicable because the change is large scale, and the presenters must rely on influence rather than being able to direct or demand change. As with the strategy in meeting with CMS, we are once again focused on "creating the conditions for change." (Ledlow & Stephens, 2018).

Similar to the approach applied with CMS, the presenters, now also including stakeholders from AHA, should further prepare by reviewing the ASPR strategic plan. Training is included as a part of ASPR's first strategic goal: "prepare for future public health emergencies and disasters" and improving training is listed as an objective under this goal (ASPR, ASPR Strategic Plan for 2022-2026, 2022, p.3). Funding is also mentioned in ASPR's strategic plan, stated as a goal to "support… the healthcare system's readiness and response capabilities through funding, technical assistance, and sharing of promising practices" (ASPR, ASPR Strategic Plan for 2022-2026, 2022, p.7). The strategic plan document closes with a conclusion that ASPR needs to explore and strengthen partnerships to move toward the future. Each of these key positions and goals can be highlighted in the meeting with ASPR to strengthen the argument for the increased

funding needed not just to incorporate the training standard but also improve healthcare emergency preparedness overall.

Moving from concept and application of leadership theory and change management approaches to a specific outline for the meeting with ASPR, the presentation would entail:

1. Introductions
    a. Relationship building
    b. Role Clarity
2. Background
    a. Variability in healthcare preparedness discovered as a part of the study
    b. Demonstrate how the training standard aligns with ASPR's Strategic Plan
3. Data and Findings
    a. Present overall results
    b. Discuss how a Training Standard can decrease variability in preparedness
    c. Discuss how the study informed development of the training standard
4. The Training Standard
5. Summary of the meeting with CMS
6. Discuss implementation
    a. Offer long term partnership
    b. Discuss cost barriers
    c. Request additional funding through HPP

7. Clear outline on next steps
    a. Any additional information needed to justify increased funding
    b. Need for additional meetings
    c. Negotiate timeline for increasing funding

Following the meeting with ASPR, the presenters would debrief on the meeting and additional actions needed as a result of the meeting to ensure the outcome of increased funding is achieved.

Project dissemination

With barriers and enablers in mind, adoption at the hospital level is dependent upon educating healthcare leadership about the value equation of training in healthcare emergency preparedness and in improving healthcare operations. Educating healthcare leaders will occur through several methods including submitting for publication in healthcare leadership journals, application for presentation at the American College of Healthcare Executives (ACHE) conference, and application for presentation at the American Hospital Association (AHA) conference.

Due to the impact regulatory standards have on changes in the healthcare environment, this study and recommendation for a national standard for emergency manager training in hospital emergency preparedness will be shared with the Centers for Medicare & Medicaid Services (CMS) in partnership with AHEPP leadership taking the steps outlined previously. The AHA also holds a critical and influential role in driving national healthcare policy and federal funding decisions and requesting support from the

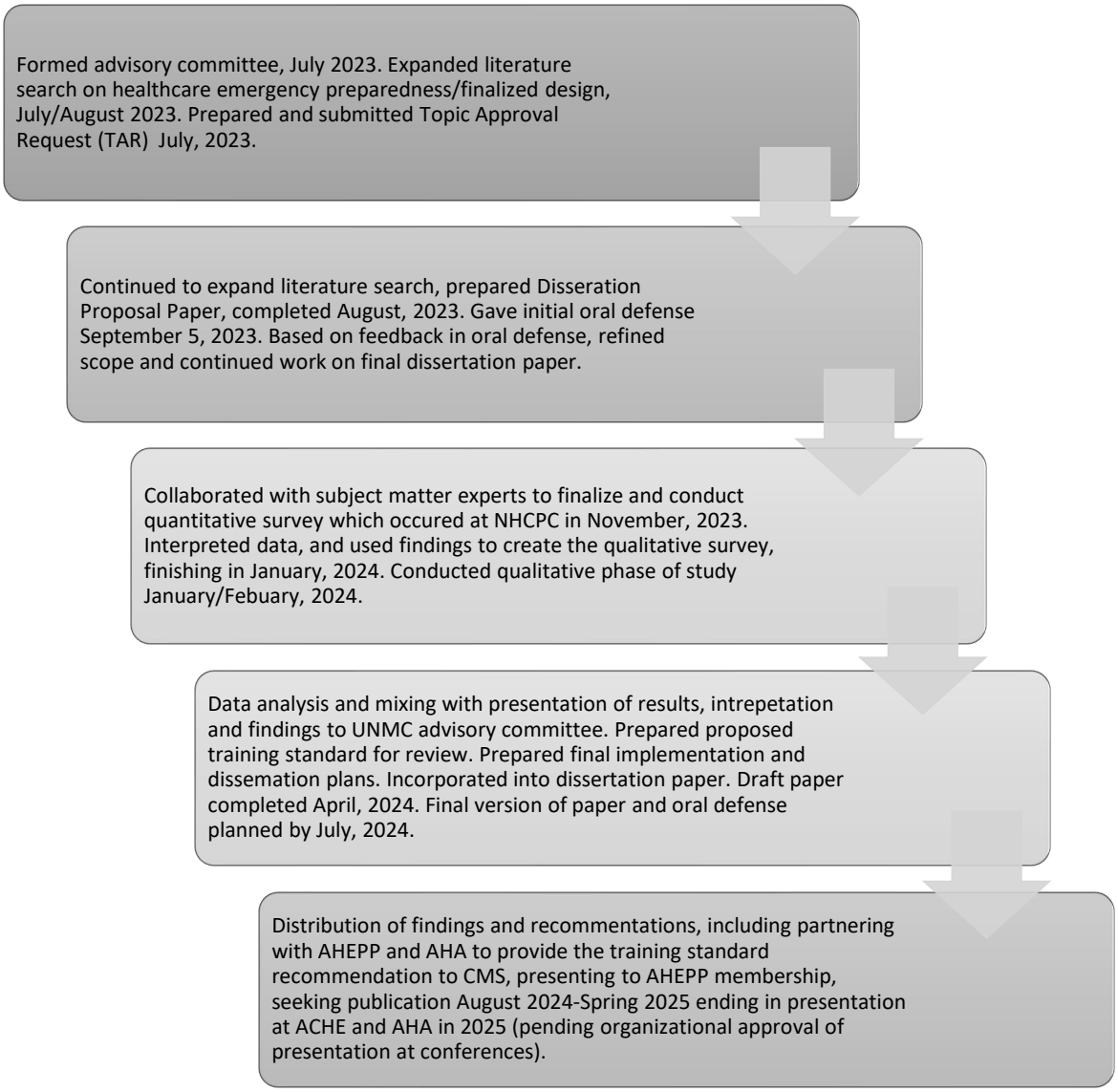
AHA as outlined in the prior section is also a part of the implementation and dissemination plan.

Emergency preparedness professionals in healthcare are also stakeholders and critical to include in the project dissemination plan. Engaging emergency preparedness professionals throughout the project was a key component of this research and recommendation for a training standard. Sharing the results with emergency preparedness professionals will occur through seeking publication in emergency preparedness journals as well as presentation to the membership of AHEPP.

Timeline for the project

The timeline for this dissertation project began in July of 2023 and continued through July of 2024. Dissemination of the research will continue through 2025. A detailed dissertation project timeline is outlined in Image A:

Image A – Timeline for the Project



Chapter 6: Discussion

Impact to the public

As outlined in detail in Chapter 2, the impacts to public health from disasters are significant including the more obvious risks of physical and mental injuries, death and increase in disease, but also loss of infrastructure, including healthcare facilities, as well as longer-term, more subtle impacts like exacerbating health inequities. Disasters, both natural and man-made, are increasing in frequency and complexity. Improving healthcare emergency preparedness through training mitigates these impacts and therefore positively impacts the health and safety of the public. There are many examples where further training improved the public's health outcomes. Garzonis, et al. studied the impact of additional training for healthcare staff on patient mental health outcomes and found that additional training improved staff competency and as a result, patient outcomes improved including decreased symptoms and improved access and care through appropriate referrals (2015). Hatfield, et al., conducted a systematic literature review and meta-analysis of the effect of training of health professionals in promoting patient health behaviors and found training health professionals significantly improved patient health behaviors and thereby improved overall public health (2020). Burgess & Kynoch studied the impact of nurse led interventions in the emergency department following additional training in triage and found positive impacts in patient outcomes including patient waiting time, time to treatment, length of stay, and pain levels (2017).

Emergency managers are the leaders of healthcare preparedness and response. Investing in their training improves healthcare emergency preparedness overall and therefore, the health and safety of the public. Feldmann-Jensen, et al. stated, "The

emergency manager's contribution will be pivotal toward reducing disaster risk and building resilient, thriving communities amid a future of high turbulence, uncertainty, and complexity" (2019, p. 23).

The main advantage to the public in adopting a healthcare emergency training standard is to improve healthcare emergency preparedness and thereby, better mitigate the impacts of disasters. The only potential disadvantage to the public in adopting a training standard is the cost of additional training and the increased funding required to support this additional cost. However, as outlined in the previous chapter, the opportunity for cost avoidance in mitigating disasters far outweighs the additional investment needed for the training standard. For example, in looking at just one disaster type, wildfires, the U.S. spends an estimated $394 to $893 billion each year in economic costs and damages (Joint Economic Committee, 2023). Avoiding just a fraction of this cost by improved preparedness and response would more than fund the needed investment in healthcare emergency preparedness. Again, the vehicle for distributing this funding is increasing the amount funded through the Hospital Preparedness Program.

Study limitations and areas of future research

This study has several limitations and highlights some important topics that future additional research would benefit. The scope of this study was limited to emergency preparedness professionals with responsibility for acute healthcare facilities. Acute care is only a portion of what needs to be considered in training for healthcare emergency preparedness and response. Subacute environments, including ambulatory/medical offices, home health and long-term care facilities, all play important roles. Writing for

MGMA Connection, Dahl, et al. outlines the importance of medical offices being ready for disasters, stating that caring for patients includes being ready for responding to disasters and that the important role medical care plays in the community demands preparedness, even if the disaster does not directly impact the operations of the medical office (2023). In another example, John Walsh reviewed long-term care and skilled nursing facilities in compliance with the CMS final rule and stated, "nursing home residents experience death and injury at a disproportionately higher rate than other populations during and after a disaster" but at the same time, "LTC and SN facility staff have not had extensive access to…training" (p. 178). Walsh goes on to state that this gap creates a "burden" for emergency managers that we need to collectively and interdependently overcome (2020). Using the training standard proposed in this work as a baseline and spreading it to healthcare emergency professionals in non-acute environments is recommended.

In addition to expanding to non-acute environments, future areas of research should include healthcare workers and providers who do not have emergency preparedness as a primary part of their job responsibilities. This need for additional training for healthcare workers and providers was highlighted by the study, specifically in the focus groups. This gap is reflected in literature as well. Labrague, et al. studied nursing disaster preparedness in a systematic review spanning ten years and found, "it is widely reported that nurses are insufficiently prepared and do not feel confident responding effectively to disasters", however, factors improving preparedness included prior experience and training (2018, p.41). Another example is from Doucet, et al., who conducted a study on preparedness in trauma surgeons in the U.S. and stated, "Based on

training and organizational requirements, one would expect that trauma surgeons would be well prepared for disaster management. However, we find that despite the recent SARS-CoV-2 pandemic—a disaster with the highest case fatality rate and the fifth largest number of deaths in global pandemic history—only a minority of trauma surgeons have formal training in disaster management" and went on to state that it is "imperative that surgeons participate in hospital system disaster preparedness" and "professional organizations should pursue advocacy for hospital disaster preparedness, articulating and deploying national standards for hospital preparedness and augmenting online disaster training opportunities" (2023, n.p.). From a broad perspective of healthcare worker training in emergency preparedness, Gowing, et al. outlined the importance of including "the multi-disciplinary health care team as participants" and stated, "there needs to be a greater focus on the whole health care team, including allied health professionals and support staff, for both internal and external disasters" (2017, p. 321). Also taking an industry wide perspective, Emigh, et al., made seven recommendations for improving emergency preparedness and resiliency including training. Recommendation number three, education, discusses healthcare professions such as nursing leveraging their national organizations to create standards as well as advocate for changes with government regulators to implement educational requirements, and continuing education requirements, for healthcare professions in disaster preparedness and response. Recommendation four outlines, "Every healthcare provider in the U.S. should receive training regarding disaster medicine, as well as public health monitoring. Completing ICS courses online does not prepare providers for the reality of emergencies, disasters, catastrophic events, or mass casualty events" (2023, p. 8). The groundwork established in

this study can support this future research and development of healthcare emergency preparedness training standards for healthcare workers and providers.

In considering other healthcare workers, it would be remiss to not include healthcare leaders and the specialized training healthcare leaders need in emergency preparedness, especially because leadership education was a key need identified in this study. Salerno, et al. conducted research about the impact of training in emergency preparedness for public health, rather than healthcare, but the findings are applicable. In their conclusion section, in referring to emergency preparedness training, the authors state, "Emphasis should not be limited to just technical and role-specific training but leadership training as well" (2020, p. 176). This need for leadership was especially evident during the recent pandemic and leadership has the power and accountability to support team resilience as well. "Leadership should ensure the resilience of their team. The lack of proactive measures in healthcare operations and leadership affected its preparedness to lead their team and keep them resilient" (Elkbuli, A., et al. 2021, p. 804). Reedy et al. studied nurse leader readiness for disasters and concluded, "nursing leaders lack consistent education that prepares them for emergency and disaster management. Nurse leaders across all levels would benefit from formal education in these areas" (2022, p. 536). Nembhard, et al. took it a step further, outlining several actions leaders needed to take during a crisis, including, caring for their teams, creating psychological safety, and forming and strengthening outside partnerships and collaboration. (2020). Leadership training for emergency preparedness and providing for their team's resilience are linked. The need for training healthcare leaders in emergency preparedness was also expressed in the focus groups during this study and would also assist in garnering greater support of

healthcare emergency preparedness through education of leadership. Leadership training on these topics and including areas such as ICS operations are important areas of additional research.

Support of responders is another critically important area of future research and is related to training because additional training can decrease responder stress (Emigh, et al., 2023). In an article for Time, Elizabeth Millard interviewed subject matter experts in healthcare and public health about how emergency preparedness and response needs to evolve post COVID-19 pandemic. The overarching theme was a concern about burnout and how to take better care of all levels of responders, especially in the face of a long duration event. The author went on to state, based on conversations with those in the field, planning and preparing for events can help mitigate burnout and build resilience (2022). In writing for the *Journal of Healthcare Management*, Dr. Beth Lown combined the topics of caring for the workforce, advancing equity and leadership. Dr. Lown states, "Critical conversations are needed among all stakeholders to create strategies that are centered on equitable and compassionate care for all." Dr. Lown goes on to outline a call to action for leaders to "engage with all caregivers as collaborators and co-designers of the healthcare processes and policies they live and work with every day" explaining that this will improve care for patients while at the same time, improving healthcare worker's well-being (2021, p. 257). Santarone, et al. outlined several actionable steps leaders can take to support healthcare worker's well-being. The authors offer multiple, easily accessible options for seeking mental health care. Recommendations include: (1) offering telemedicine and support groups for healthcare workers; (2) providing education on how to best support patients with mental healthcare needs; (3) ensuring patient referral

services are available when patients need more care; (4) preparing a backup workforce including partnering with schools to access students ready to graduate as well as staying connected to retired healthcare workers and providers who would be willing to help in surges; and (5) creating and strengthening partnerships with public health and our military to be able to further ramp up workforce support as needed (2020). Leadership is an enabler for responder well-being and workforce resilience. Understanding how to support responders and promoting the well-being of the workforce, even in the face of disaster response and exploring how to incorporate this into leadership training is an urgent area of additional research and action.

Health equity in emergency preparedness and response is another critical topic and is important to mention again here. Training on how to overcome health inequity in disaster preparedness and response is an emerging topic and needs to be further explored in future research. Leider, et al. conducted a systematic literature review on improving equity in disaster response and recommended incorporating ethical analysis and decision making as a part of emergency planning and response, stating, “Ethical frameworks should guide clinical protocols, but this requires that ethical analysis clarifies what strategies to use to honor ethical commitments and achieve ethical objectives. Such implementation issues must be considered well ahead of a disaster” (2017, p.1). In discussing the focus during disasters on vulnerable populations and use of available data, Balsari, et al., stated, “hospitals need to know — before, during, and after a disaster — who and where these vulnerable people are, their hazard-specific risks, and whether they have been displaced from their networks of care” (2022, p. 1528). The Federal Emergency Management Agency (FEMA) lists advancing equity as a core strategy and

recently released a guide to support equitable post-disaster recovery. Paired with the guide FEMA released earlier in 2023, it is meant to be an "accessible roadmap to equity" emergency preparedness professionals can follow to incorporate diversity and achieve equity in disaster planning, management and recovery (2023, n.p.). Leaders in healthcare, public health and government are also accountable to address equity, support responders and ensure a trained and ready workforce (Quinn, 2020). In the *International Journal of Public Health*, Hoven et al. outline specific recommendations on incorporating diversity and equity into emergency preparedness planning, stating, "social and ethical issues need to be integrated into pandemic preparedness plans so that they are recognized and addressed in all policies, 1) by including them in regular independent parliamentary reports, 2) via better preparation and training of health workers and decision makers, and 3) by integrating findings from interdisciplinary implementation science, as well as health communication experts" (2022, p. 4). As outlined in the article by Hoven, et al., training of health workers and decision makers (leaders) can advance health equity in disaster preparedness and response (2022).

Improving collaboration is a strong theme and renewed focus coming out of the long pandemic and has also been a theme in supporting responders and preventing or mitigating burnout. Gooding, et al. focused on four actionable strategies preparedness professionals can take to foster collaboration in their research encompassing several different countries. First, "coordination needs to be inclusive", convening stakeholders including both government and private institutions, and civil organizations with a clear focus on diverse representation. Second, structural aspects such as clear roles and meeting mechanisms are important. Third, ensuring "sufficient capacity, including staff,

funding, communication infrastructure and other resources, and learning(s) from previous emergencies". Lastly, support by national level government leadership is critical. The authors also made special mention of healthcare systems and the need to ensure collaboration in delivering healthcare as a key component of disaster response (2022, p.1). The American Hospital Association (AHA) created the CLEAR Guide (Convening Leaders for Emergency And Response) with several goals including improving preparedness, encouraging collaboration and caring for the workforce. The authors discuss "normalizing a culture of preparedness" and go on to state this is part of caring for our workforce because it can decrease fear and anxiety, as well as the losses, disasters can create (2022, p. 2). The CLEAR guide was a collaborative effort in itself. While the AHA acted as a convener and producer, other organizations involved were the American Public Health Association (APHA), the Association of State and Territorial Health Officials (ASTHO), the International Association of Fire Chiefs (IAFC), the National Association of County & City Health Officials (NACCHO), the Public Health Accreditation Board (PHAB), and the Society for Public Health Education (SOPHE). This example of cross organizational collaboration and partnership between healthcare and public health organizations is essential for attaining improved public safety and health as well as true equity. While collaboration is partly addressed in the basic training standard in the convening partners training topic, further research is needed on the impact of training on collaboration, and this would also strengthen the current study and training standard.

Finally, a core tenant of this research and partnership with AHEPP and a consideration for future research is how to support the advancement of the profession of emergency preparedness and management as a whole. This study and the development of a training standard for healthcare emergency preparedness professionals is a step in advancing the profession.

Even with steps in the right direction, there has been a debate over whether emergency management is a profession. Part of the definition of a profession is specialized expertise, partly gained through training. Adopting a national standard for training will not only improve emergency preparedness, but it will also provide a consistent baseline of training for emergency preparedness professionals and continue to support advancement of emergency management as a profession. Part of advancing as a profession is establishing professional organizations to organize, advocate, provide professional standards and quality education, and healthcare emergency preparedness has that in AHEPP. Part of advancing as a profession includes certification, again, to provide a best practice standard. Again, the profession of healthcare emergency preparedness has a certification option through AHEPP. The proposed training standard in this study narrowed in scope to a recommendation for those new to the field. Pursuing the requirements for certification through AHEPP can serve as the standard for those advanced in the field. By implementing training and certification standards, we advance the profession. “This debate over the status of emergency management is an important one because the field of disaster science will not be taken as seriously as it should be until recognized by everyone as a significant, crucial, and indispensable profession—one that

requires special standardization, certification, training, and recognition" (Urby, et al., 2021, p. 531).

Emergency preparedness professionals deserve a seat at the table in policy creation, strategic planning and community convening and these activities will be improved by their presence. Based on the nature of their roles and responsibilities, emergency preparedness professionals are often critical thinkers and problem solvers. Their professional focus is on the protection of others, and they often do not receive the credit that they deserve. One of the best ways to provide that credit to them is to invite them to decision-making conversations, listen carefully to their ideas and gaps they have identified, advocate for more national attention and funding for emergency preparedness, and provide training and financial support for preparedness programs. Adopting a national training standard for healthcare emergency preparedness would be an excellent first step in this process.

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Appendix A – Training Standard (Guideline Format)

Topic	Year 1	Year 2	Year 3	Format
ICS and ICS operations	11 hours	11 hours	11 hours	In person
Exercising	11 hours	11 hours	11 hours	In person
Conducting a hazard vulnerability analysis (HVA)		11 hours		In person
Risk communications (internal and external)			11 hours	In person
Facilitation (convening partners for collaboration)		11 hours		In person
Healthcare surge (trauma-based and ID-based)	11 hours			In person
Healthcare evacuation	11 hours			In person
Writing your emergency preparedness plan	11 hours			Online Synchronous or hybrid
Business continuity		11 hours		Online Synchronous or hybrid
Other specialized responses			11 hours	Online Synchronous or hybrid

Appendix B – Self Study (online asynchronous) Course Recommendations (to augment the training standard)

Federal Emergency Management Agency (FEMA) independent study (IS) courses:

- IS100 – Introduction to Incident Command System (ICS)
- IS120c – Introduction to Exercises
- IS200 - Basic Incident Command System for Initial Response
- IS201 - Forms Used for the Development of the Incident Action Plan
- IS230e - Fundamentals of Emergency Management
- IS235c - Emergency Planning
- IS240c - Leadership and Influence
- IS242c – Effective Communication
- ICS 300 – Intermediate ICS for Expanding Incidents
- ICS 400 – Advanced ICS – Complex Incidents
- 700b - An Introduction to the National Incident Management System (NIMS)
- 800.D -National Response Framework, An Introduction
- K0146 – Homeland Security Exercise Evaluation Program (HSEEP): Basic Course. “K” is for the online version.