EMERGENCY/DISASTER PREPAREDNESS OF RURAL HEALTHCARE PROVIDERS

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ABSTRACT

Healthcare systems have a legal and moral duty to provide competent care to all consumers whom seek treatment even when natural disasters, terrorism events, pandemics, widespread chemical/radiologic exposure and other emergency/disaster events stress the system beyond its capabilities. Education, training and exercises are emergency/disaster preparedness activities that are essential to providing quality care to victims. Healthcare providers, including physicians, nurse practitioners, and physician assistants, are a vital resource for an emergency/disaster response; a consensus of research indicates an overall inadequate level of preparedness among healthcare providers. A majority of emergency/disaster planning efforts have been primarily aimed at urban communities with few published disaster planning efforts addressing the needs of rural communities and the unique challenges they face in emergency/disaster preparedness. The purpose of this practice improvement project was to identify the current status of education/training of rural healthcare providers and identify gaps in training/education to better prepare them to care for victims of emergencies/disasters. A needs assessment was administered to the healthcare providers at a rural healthcare facility in southwest North Dakota and analyzed for trends. Based on the analysis of the survey, the healthcare providers felt moderately prepared to care for victims, yet a universal desire to gain access to increased emergency/disaster education and training was reported. A comprehensive educational plan was developed, and corresponding educational resources were identified. The educational plan addressed 12 domains: personal preparedness, hazard recognition/response, terminology/emergency operations frameworks, communication, health/safety, patient logistics management, special needs populations, mental health considerations, legal/ethical principles, and hazard-specific medical management/triage. The needs assessment findings and education

plan were provided to key stakeholders within the sponsoring organization to increase healthcare provider emergency/disaster preparedness awareness. Project methods can serve as a framework for ongoing development of assessment of rural healthcare providers' competency in providing care to victims and rural emergency/disaster educational plans.

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DEDICATION

My family has provided me with love, understanding, and unwavering support during my pursuit of the Doctor of Nursing Practice degree. I dedicate this dissertation to my soul mate, Jeff, whose love and belief in my abilities have provided me with motivation to persevere through the thousands of miles, hours of coursework, tears and fears. I also want to dedicate this dissertation to my daughter, Morghann, who has given me the drive to do better and be better every day while providing me with the inspiration to fervently chase my dreams. It is my hope that this journey has shown her and Dilynn that you can do anything you put your mind to. My parents, Scott & Melody, have instilled in me strength and tenacious work ethic and words cannot express my appreciation for their lifelong love and encouragement. Additionally, my sister and brother-in-law, Lisa and John, have been an immense source of support and I am thankful for their acceptance my neglect without complaint.

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CHAPTER ONE. INTRODUCTION

Background

Healthcare systems have a legal and moral duty to provide high quality, competent care to all consumers whom seek treatment, from the routine illness to victims of emergencies/ disasters. Disaster preparedness within the healthcare system is essential to providing quality care to disaster victims. A disaster as defined by Leow et al. (2012) is "a sudden calamitous event bringing great damage, loss, or destruction that exceeds the community's ability to meet the needs of those involved in the disaster" (p. 356). Since the September 11th, 2001 terrorist attacks, considerable effort has been put toward disaster preparedness; however, the efforts have been primarily aimed at urban communities and does not address the needs of rural communities and the unique challenges they face in disaster preparedness.

The wide-reaching results of disasters such as the September 11th, 2001 terrorist attacks and Hurricane Katrina in 2005 have been extensively publicized creating a greater focus on preparing healthcare facilities and communities for emergencies/disasters to prevent widespread morbidity and mortality. Although the causation and nature of these two events differed greatly, they demonstrated that a coordinated response by healthcare facilities and measures to mitigate damages and injury, or lack thereof, greatly affects the outcomes (Pole, Marcozzi, & Hunt, 2014). Emergency/disaster preparedness includes developing the capacity to care for multiple injured/ill patients and is an essential responsibility of healthcare providers (American Medical Association, 2018). For the purposes of this project, the term healthcare providers include physicians, nurse practitioners (NPs), and physician assistants (PAs). In 2008, the Institute of Medicine (IOM) prepared a report citing a research priority area regarding emergency/disaster response and preparedness for healthcare organizations to create a sustainable preparedness and

response system. An all-hazards approach, which is the preparation by healthcare organizations to respond to a variety of events is imperative to prevent excessive human and financial losses. The increased focus on the research aspect of emergency/disaster preparedness continues today, including the enhancement of training, improving timely communication, ensuring sustainability of response systems, and the development of effectiveness metrics (Leinhos, Qari, & Williams-Johnson, 2014). Evidence-based scientific knowledge is needed to drive the development of standards and policy; however, the retrospective nature of emergencies and disasters makes level one evidence next to impossible to obtain (Alcantar-Ayala et al., 2015).

Over the past two decades multiple advances in healthcare preparedness policy have been developed which included requirements for healthcare systems by medical governing agencies such as the Centers for Medicare and Medicaid Services. Additionally, multiple core competencies outlining the required knowledge and skills for healthcare providers have been developed by professional organizations such as the Emergency Nurses Association for Nurse Practitioners, National Organization of Nurse Practitioner Faculties, American College of Physicians, and American College of Emergency Physicians, although none have been universally accepted. The transition to an all-hazard preparedness has led to the development of coalitions to foster collaboration among public and private entities, a medical reserve corps of volunteers to call upon during staff shortage, and stockpiles of critical supplies throughout the nation (Toner, 2017).

Rural communities have unique barriers preventing adequate emergency/disaster preparedness. The majority of rural populations have lower incomes, lower levels of education, and rely on agricultural and natural resource industry, all of which can restrict response capabilities and recovery due to limited economic resources (Baack & Alfred, 2013; Hanfling,

2013; Hodge, Miller, & Skaggs, 2017). Rural areas are geographically isolated, have small or absent public health departments, and less sophisticated forms of technology/communication systems for both intra- and inter-facility communication, which makes collaboration with outside resources challenging (Prelog & Miller, 2013). Regardless of location or resources, the local community response to disasters is expected to be independently maintained for a minimum of 72 to 96 hours, until additional help can be mobilized (Veenema, Losinski, & Hilmi, 2016). This expectation of self-sufficiency can pose a significant problem for rural areas, as reduced patient volumes in rural facilities require fewer personnel forcing single healthcare employees to fulfill several roles in an emergency/disaster event. Limited personnel resources make it imperative that all members of the healthcare community are familiar with their facility's emergency/disaster preparedness plan and have the skills to care for victims of an emergency/disaster. Over the past two decades, healthcare emergency/disaster preparedness financing has been cut in half, forcing healthcare systems and communities to meet the higher preparedness expectations with less funding (Segal, Lieberman, & May, 2016). The continued exploration of how to prepare rural communities and healthcare systems for emergencies/disasters is critical to survival and public safety.

Significance of Project

The nature of emergencies/disasters prevent real-time research and observations, leaving post-disaster evaluation or pre-event levels of preparedness the most feasible for study. Limited research exists regarding emergency/disaster preparedness of rural healthcare providers and rural areas often lack resources to respond. Preparedness and response abilities can vary extensively from one community to another, due to a lack of consistent training and infrequent evaluation of internal and external barriers to a coordinated response (Segal, Lieberman, & May, 2016). Rural

healthcare providers' understanding of the potential emergencies and their role in providing care is imperative to save lives and reduce economic losses.

Problem Statement

Disasters/emergencies can have significant consequences for the community in which they occur, and these consequences can be mitigated by increasing preparedness. The purpose of this project was to identify the current status of emergency/disaster preparedness education/training of rural healthcare providers and identify gaps in emergency/disaster preparedness training/education to better prepare them to care for victims of disasters.

Project Objectives

Objective One

Identify gaps in healthcare providers' emergency/disaster preparedness knowledge, experience, education level, and perceived level of competency to care for disaster victims and perform skills related to their care within a rural healthcare facility.

Objective Two

Identify the healthcare providers' perceived likelihood that a specific emergency/disaster event will occur in their community as compared to the facility's hazard vulnerability assessment (HVA).

Objective Three

Identify barriers to participating in training, preferred methods of learning, and time available to dedicate to emergency/disaster education for providers at a rural healthcare facility.

Objective Four

Provide educational recommendations to the sponsoring organization with a proposed education program to enhance healthcare provider's skills to care for victims of emergencies/disasters.

CHAPTER TWO. LITERATURE REVIEW & THEORETICAL FRAMEWORK

A literature review was completed using databases to retrieve evidence-based research articles that contributed to and supported the objectives of this project. The databases used included PubMed, Cumulative Index to Nursing and Allied Health Literature (CINAHL), Medline, and Cochrane Library. Keywords/phrases with the "AND" modifier included: emergency/disaster preparedness, rural healthcare provider, healthcare preparedness, and preparedness education/training. Inclusion criteria included publication between 2011 and 2018 which were available in full text. Exclusion criteria included studies conducted outside of a healthcare organization and publish date prior to January 2011. The search criterion resulted in 586 articles in all databases. Articles were reviewed by the researcher for duplication, and abstracts were reviewed for relevance to project. A focus on studies conducted in rural United States impacting emergency/disaster preparedness and policy was desired for applicability to the project. However, several articles discussed general principles of emergency/disaster preparedness and were included to add further depth of understanding.

Emergency/Disaster Preparedness

Historical accounts and recent events prove that emergencies/disasters can result from man-made or natural occurrences. Over the past decade, the frequency and severity of weather/geologic, technological, communicable disease, and man-made disaster events have been increasing (Wuebbles et al, 2017). The impacts of climate change on weather patterns suggest that the frequency of weather-related disasters will continue this pattern of escalation. In 2016, natural disasters alone resulted in 569.4 million people affected, 8,733 deaths, and $153.9 billion dollars in damages (Guha-Sapir, Hoyois, Wallemacq, & Below, 2016). A human-caused disaster can be created by multitude of hazards including a mass casualty event, biologic event,

chemical event, radiologic/nuclear event, explosive/bombing events, mass shooting event, or pandemic/infectious outbreak. Natural disasters can be caused by weather events (tornadoes, hurricanes, extreme heat/cold) or by movements of the Earth (earthquakes, volcanic eruptions, tsunamis). Similarly, internal or external triggers can create an emergency or disaster for a healthcare organization (Belmont et al, 2015). Institutionally-based emergencies such as structural damage, infrastructure failure, or internal hazard material exposures are events that threaten the safety of staff, affect the patients receiving care, and reduces the healthcare system's capacity to accept new patients. In addition, external triggers, such as terrorist activities, natural disasters, and mass casualty events, lead to the local healthcare system receiving the wounded and displaced while likely becoming a hub for families and media as well (Hanfling, 2013). In North Dakota, the Department of Emergency Services experiences six to twelve emergency operation center activations annually in response to all types of events (J. Markel, personal communication, September 7, 2016). In contrast, Wyoming and South Dakota, which possess a similar population density as North Dakota experience only two to four activations annually (K. Ruiz & J. Bauder, personal communication, March 12, 2018).

The emergency management discipline has defined several integral terms, concepts, and principles to provide a common language among the multiple disciplines required to prepare for and respond to emergency/disaster events. Terms such as emergency and disaster are often mistakenly used interchangeably, and appropriate terminology usage facilitates uniformity and clarity. A hazard is a threat or potential trigger that may or may not lead to an emergency/disaster event (Haddow, Bullock & Coppola, 2017). Hazards are most often identified during risk assessments and routine surveillance. Hazards are not considered emergencies/disasters until there is an impact on human life or property. Mitigation activities serve to negate the hazard,

reduce the likelihood of development into an emergency/disaster event, or reduce the damage incurred from the event. An emergency as defined by Veenema (2013) is “any natural or man-made situation that results in severe injury, harm, or loss of humans or property” (p. 727). Given this broad definition, emergencies are inevitable and can occur in any location at any time. The Federal Emergency Management Agency’s (FEMA) most recent modification to its terms and definitions differentiates a disaster event from an emergency event by defining an emergency as “an unexpected event that requires an immediate response through the use of routine community resources and procedures” (Blanchard, 2008, p. 275).

When the hazard event creates impacts beyond the capabilities of the community resources, a disaster occurs. Veenema (2013) defines a disaster as “any destructive event that disrupts the normal functioning…(with) a severity and magnitude that result(s) in deaths, injuries, illness and property damage that cannot be effectively managed using routine procedures or resources and require outside assistance” (p. 3). FEMA further defines a disaster as “an event that requires resources beyond the capability of a community and requires a multiple agency response” (Blanchard, 2008, p. 275). The Department of Homeland Security (DHS), defines disaster preparedness as "a continuous cycle of planning, organizing, training, equipping, exercising, evaluating, and taking corrective action to ensure effective coordination during incident response” (Department of Homeland Security, 2018). The process includes all pre-event activities to increase readiness to respond and is the only phase of emergency/disaster management framework that occurs exclusively prior to an event. Healthcare provider preparedness for this study was defined as the education and training events used to gain knowledge about the treatment of victims of emergencies/disasters.

Emergency Management Principles

The basic principles of emergency/disaster management have been documented for decades. The four phases of healthcare emergency/disaster management framework are preparedness, response, mitigation, and recovery (Veenema, 2013). Also known as the life cycle of emergencies/disasters, this framework serves to provide structure for communities and organizations to cope with emergencies and disasters. Preparedness is the state of readiness to respond to an emergency/disaster event. Real-time observations and study during an emergency/disaster event are not feasible, making preparedness the most amenable to modification and research. Examples of preparedness activities would include contingency planning, formulating policies, developing partnerships and agreements with local organizations, and staff training/drills. Mitigation occurs before, during, and after an event which serves to reduce vulnerability to an event occurring or lessen the impact of the event once it occurs (Veenema, 2013). Purchasing insurance, repairing and improving infrastructure, and placing sandbags around a structure during a flood are examples of mitigation activities. The response phase begins when an event occurs with implementation of the disaster response plan established during the preparedness phase. Disaster response addresses the immediate and short-term needs of the entity involved which includes preservation of life/property and maintenance of basic needs (Haddow, Bullock, & Coppola, 2017). The recovery phase includes all efforts to restore normalcy and return the system and community to its prior level of functioning (Veenema, 2013).

Effective emergency/disaster preparedness planning is dynamic, fluid, and ever-changing in order to be sustainable (Segal, Lieberman, & May, 2016). Healthcare emergency/disaster preparedness requires careful examination of the environment and vulnerabilities that exist

within the healthcare system and community. Collaboration and cooperation among varying community stakeholders along with dissemination of the response plan to responder/community leaders is crucial to a successful coordinated response. Prior to any event, hazard identification and mitigation activities serve to bolster defenses and reduce the severity of impact. For example, a hazard vulnerability analysis (HVA) is a systematic approach to identifying risks and serves to guide the development of the emergency/disaster plan (Los Angeles County Department of Public Health, 2013). After using historical data, predictive data, and geographical trends to identify potential hazards, the HVA considers the impact the hazard could have on the community, public health, medical system, mental health system, and the community/responder resource pool. The HVA also examines the level of preparedness for the event, or activities that serve to mitigate the hazard through plans, resources and partnerships (Department of Homeland Security, 2013). The elements of probability, health severity, impact, and agency resources are assigned a numerical value to calculate a relative risk score and allows for prioritization in emergency/disaster preparedness activities.

Emergency/Disaster Education and Training

Healthcare provider education and training are the cornerstone of healthcare emergency/disaster preparedness and response. Healthcare providers to include physicians, nurse practitioners, and physician assistants, are a vital asset in preparedness activities for healthcare systems due to their knowledge of the health needs in their community. A significant positive correlation exists between employee education/training and improved job performance and favorable organizational outcomes (Ghafoor, Khan, Khan, & Khan, 2011). There is a limited amount of existing literature regarding provider education, and the majority of what exists is focused exclusively on nursing. A logical approach would be to ensure all healthcare providers

receive emergency/disaster preparedness training during their university-based education while pursuing a bachelors, masters, or doctoral degree (Langan, Lavin, Wolgast, & Veenema, 2017). However, barriers to implementation of a comprehensive emergency/disaster preparedness curriculum in higher education have been identified as a lack of time, absence of standardization and validation, and ever-evolving recommendations from various agencies (Adams, Canclini, & Frable, 2015; Jose & Durfrene, 2013).

In general, healthcare providers report limited, if any, emergency/disaster response training during their formal education and post-graduation emergency/disaster preparedness opportunities vary (Miller, Rambeck, & Snyder, 2014). A national poll conducted by SteelFisher et al. (2015) reported that 55% of physicians had received emergency/disaster preparedness training within the previous two years, while another survey found that 40% of providers reported no consistent annual training at their current place of employment (Scott et al., 2012).

Education and training modalities for emergency/disaster response include computer based/distance training, simulation activities, lecture format, written materials, and blended learning. The preferred delivery method of training remains debatable and employing various delivery techniques theoretically would likely suit a wider array of learning styles. Hands-on drills and simulations have been proven as a valuable dissemination technique as they provide realistic scenarios and a controlled environment in which to practice skills and roles Skryabina, Reedy, Amlot, Jaye, & Riley, 2017). A systematic review of nurses worldwide correlated hands-on drills and previous disaster response experience with a higher self-perceived preparedness (Labrague et al., 2017). The most effective education is likely individualized and geared towards the healthcare providers' learning preferences and self-perceived knowledge gaps (Assistant Secretary for Preparedness and Response, 2016).

The ability to retain education and then transfer skills and knowledge is imperative under the stressors encountered during an emergency/disaster event. The goal of emergency/disaster preparedness education is to ultimately prepare healthcare providers to deliver optimal care to disaster victims. Regardless of instructional method, there is great value in repetition to combat the decay of knowledge over time (Miller, Rambeck, & Snyder, 2014). However, validated objective measures of a healthcare provider's translation of knowledge into a coordinated response during an event have not yet been developed. A healthcare provider's self-perception of competence is difficult to consistently measure and very subjective, however, it remains the most utilized indicator of individual emergency/disaster preparedness (Blanch-Hartigan, 2011). Blanch-Hartigan (2011) stated that self-reported competency data should be cross referenced with another objective modality as the reliability and accuracy of healthcare provider self-reported competence is affected by confounding factors such as the subject matter of assessment, respondent gender, years of experience, and educational background. Further development and research regarding objectively measured factors that serve as predictors of healthcare emergency/disaster preparedness are needed (Nekoie-Moghadam et al., 2016).

A consensus of the limited research indicates an overall inadequate level of preparedness among healthcare providers. Emergency/disaster policies and training are vastly different from one rural community to another and can vary among healthcare systems within the same area. The multi-factorial cause for the variability is likely due to the lack of standardization of requirements/competencies, financial constraints, lack of community support, and differing priorities among elected officials (Veenema, Losinski, & Hilmi, 2016). Healthcare facility collaboration with public health personnel, first responders (ambulance, fire, and law enforcement), education systems, and local non-medical businesses during disaster training and

exercises allows for shared financial and manpower resources, fosters relationships, and allows for a comprehensive assessment of capabilities (Dunlop, Logue, Vaidyanathan, & Isakov, 2016). The Office of the Assistant Secretary for Preparedness and Response (ASPR) Hospital Preparedness Program has advocated for the development of healthcare coalitions (HCCs) to support the emergency/disaster capabilities of individual healthcare organizations to combat the healthcare preparedness disparities. HCCs are designed to ensure inclusion of all healthcare entities including outpatient clinics, dialysis centers, and skilled nursing care facilities to improve surge capacity, and other resources not previously considered in emergency/disaster plans. With the goal of uniting response capabilities within regions, the multiagency approach serves to foster communication, collaboration of disaster preparedness activities/education, and the expedition of mutual aid response during an event with the goal of uniting response capabilities within regions, regardless of rural or urban status.

According to Rambhia et al. (2012), the implementation of healthcare coalitions has improved the overall emergency/disaster preparedness in the United States. The benefits of coalitions are seen in participating individual healthcare organizations and entire regions through increased awareness among key stakeholders, higher quality preparedness education, more detailed emergency operations plan creation, and establishment of interorganizational partnerships. Healthcare coalition memberships have not been adopted universally and the leadership strengths vary among coalitions, thus regional disparities in healthcare preparedness remain (Carrier, Yee, Cross, & Samuel, 2012).

Barriers to Emergency/Disaster Preparedness

Emergencies/disasters are predominantly low frequency, high impact events that require continued exposure to training to ensure responder skill retention and the ability to transfer

knowledge into action (Langan, Lavin, Wolgast, & Veenema, 2017). The organizational investment of time, personnel, finances, and resources into any venture requires a promise of return or provision of value. A 2015 survey of primary care facilities identified inadequate communication technology, lack of resources for preparedness, and the need for education/training as the top three most common gaps in emergency/disaster preparedness (Williams, Jean, Chen, Molinari, & LeBlanc, 2017). Additional barriers to preparedness included a lack of standards/competencies, low institutional commitment to preparedness, lack of evaluation metrics, reduced funding, and constraints of educational systems/employers/volunteer agencies (Duncan and Doblian, 2013; Hilton et al., 2015; Hanfling, 2013; Putzer, Koro-Ljungberg, 2013). Administrative misconceptions or minimal understanding of the impacts a disaster event has upon a facility also exists (Hashikawa & Gold, 2018).

Veenema et al. (2016) proposed that greater regulation by healthcare accrediting agencies with specific requirements for training of staff would likely increase organizational buy-in to preparedness activities. During a disaster event, the encouragement of volunteerism from distant healthcare providers with the promise of training, liability protection and reimbursement for any injuries occurred during response can also bolster an alternate source of human capital (Williams et al., 2017).

Competencies and Standards of Care

One critical element of training enhancement for healthcare providers is the identification of skill sets and competencies required to provide quality, competent care to emergency/disaster victims. A competency is described as the knowledge, skills, and attitude required to accomplish a task (Englander et al, 2015). Hundreds of multi-topic competencies have been developed by governmental entities and professional organizations for healthcare professionals; however, none

of which are standardized or agreed upon between agencies. Overall, a lack of consistency within the numerous competencies' framework, language, and applicability exists (Gallardo et al., 2015). The inability to validate and prove efficacy during the actual disaster event further prevents a widely accepted consensus on emergency/disaster preparedness core competencies.

The most recent comprehensive competency set applicable specifically to medical professionals was developed in 2012 by the Emergency Medicine Foundation and funded by the Robert Wood Johnson Foundation (Schultz, Koenig, Whiteside, & Murray, 2012). A task force of multiple professional organizations and governmental entities convened to identify the necessary skills, knowledge, and attitudes to prepare for an all-hazard emergency/disaster response. Utilizing the Delphi method for consensus-building, 19 domains were identified as essential: nomenclature; incident management system; recognition, notification, identification and data collection; communication; resource management; volunteer management; government/non-government response teams; public health and safety; triage; surge capacity; patient identification and tracking; transportation; decontamination; clinical considerations; special-needs populations; evacuation; critical thinking/situational awareness; ethical principles and challenges; and psychosocial issues. In addition, the Institute of Medicine (2012) also developed the Crisis Standards of Care: A Systems Framework for Catastrophic Disaster Response.

Crisis standards of care are defined as a marked deviation for the normal operations of a healthcare facility during a disaster aimed at maximizing the number of lives saved and conservation of limited resources (Hick, Hanfling, & Cantrill, 2012). During a crisis, healthcare providers may practice outside their scope of practice, use clinical judgement rather than laboratory/radiologic data to guide diagnosis, and utilize abbreviated documentation (Koenig,

Lim, & Tsai, 2011). In addition to restructuring the healthcare organization's operations and objectives, the resources to provide usual standards of care may be inadequate and require rationing during an emergency/disaster event. The Crisis Standards of Care: A Systems Framework for Catastrophic Disaster Response, delineates medical services into three phases: conventional, contingency, and crisis care that are applicable to both rural and urban areas (IOM, 2012). As the severity of the event changes, the crisis standards provide a framework of how to efficiently utilize space, staff, and supplies and how to alter the standards of care delivered to patients. When implemented during a disaster, the crisis standards of care provide legal protections for a healthcare provider's decisions with allocation of resources and triage (Hick et al, 2012). Veenema et al. (2016) recommend that federal, state, and local agencies encourage individual healthcare facilities to utilize the 2012 IOM Crisis Standards of Care framework to develop an individualized set of standards based upon their capabilities and resources.

Emergency/Disaster Preparedness Legal & Financial Considerations

A subset of the Department of Health and Human Services, the Centers for Medicare and Medicaid Services (CMS) issues regulations for healthcare facilities, including emergency/disaster preparedness requirements (Centers for Medicare & Medicaid Services, 2018). The Joint Commission, Healthcare Facilities Accreditation Program, and Det Norske Veritas agencies survey facilities for compliance with regulations and accredits facilities that meet the minimum standards. Accreditation is a requirement to receive reimbursement for medical services and supplies provided to Medicare and Medicaid patients, which accounts for approximately half of most hospitals' revenue.

CMS (2018) recently released regulations to expand upon existing disaster preparedness requirements and provided further clarity regarding specific elements of these mandatory

healthcare facility emergency/disaster preparedness requirements. The mandated components include the need for an emergency plan, communications plan, disaster policies and procedures, training and exercise programs, and back-up electrical systems (CMS, 2018). Healthcare organizations are required to annually update their all-hazards emergency operations plan (EOP) based upon their HVA data. The communication plan requires identification of methods to coordinate patient care within the facility and how to share real-time information with local and state health departments, emergency systems, and other healthcare entities. The HVA and EOP are required to guide development of disaster policies and procedures that address subsistence of staff and patients, evacuation, sheltering in place, and maintenance of medical documentation and tracking of patients and staff during an emergency. Staff education includes review of the disaster plans, policies, procedures and annual training. The annual training must include two disaster exercises, with at least one being a full-scale community/facility-based exercise. A failure to comply with emergency/disaster preparedness regulations can result in a facility's suspension or expulsion from the Medicare/Medicaid program, administrative fines, liability insurance premium increases or cancellation, and litigation for negligent failure to prepare.

Emergency/Disaster Preparedness in Rural Communities

Classification of urban and rural areas differ depending upon the context in which the terms are utilized. The United States Census Bureau defines rural as "all population, housing, and territory not included within an urbanized area" (Qualifying Urban Areas for the 2010 Census, 2012, p. 18652) with 95% of the land within the United States rural and 19.3% of the U.S. population residing in rural designated areas. In contrast, 99.73% of North Dakota's total area is classified as rural, with a significantly higher percentage of rural residents, 40.1%, in comparison to the national average of 19.3%.

Rural-designated areas possess socioeconomic, political, and demographic characteristics that have been linked to a higher vulnerability of unfavorable outcomes during and following an emergency/disaster event (Cutter, Ash, & Emrich, 2016). During an event, the greater geographic distances between communities leads to delayed acquisition of resources, vital information dissemination, and fewer collaboration opportunities with local/regional partners. Federal and state funding distribution is generally calculated per capita, which results in less frequent infrastructure updates, antiquated technology and outdated building designs, and reduced supplies in rural areas. In addition, emergency and disaster preparedness in rural areas have unique challenges in comparison to urban areas which include:

- Restricted access to resources/public health infrastructures
- People living in poverty
- Lower income community members
- Members of the community that livelihoods depend on resource-based occupations that are at great risk in natural disasters
- Majority of community members living more than 30 miles from a hospital
- EMS personnel are usually on a volunteer basis

(NRHA Policy Brief, 2011; Prelog & Miller, 2013)

According to the National Rural Health Association (2016), socioeconomic and demographic variables have been implicated as important indicators of the severity of impact and long-lasting consequences of an emergency/disaster. Regardless of geographic location, individuals of lower socioeconomic status suffer disproportionately in emergencies/disasters and have limited resources to prepare or recover (Flanagan, Gregory, Hallisey, Heitgerd, & Lewis, 2011). Rural areas are comprised of a greater proportion of aging individuals, with 16% of rural

community residents who are 65 years of age or older, compared to 13% of the total residing in urban centers. When compared to an urban population, rural residents have lower levels of educational attainment and limited economic opportunities resulting in a 25 % lower median household income compared to urban incomes (United States Department of Agriculture, 2017). (Figure 1).

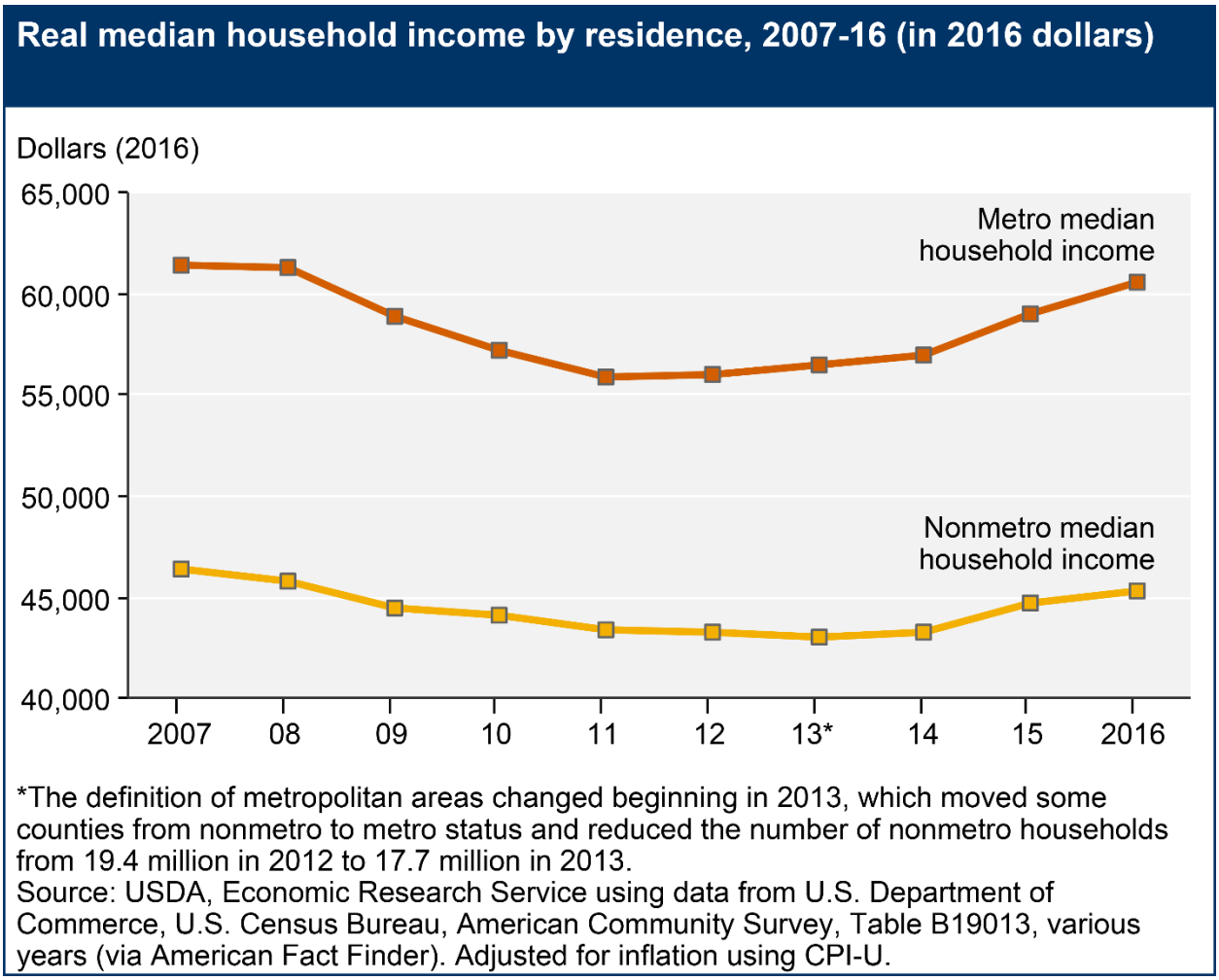

Figure 1. Rural Median Household Income by Residence,2007-2016. USDA (2016)

Generally, rural economies lack diversification resulting in a substantial economic reliance on single resource-based industries (Brown & Schafft, 2011). A rural community's lack of economic diversity and financial strength results in decreased political clout, less funding, and

an increased vulnerability to the negative effects of emergencies/disasters (Hick et al., 2012; Kulig, Edge, & Smolenski, 2014).

Rural population health disparities such as limited access to healthcare services, financial barriers, and a higher incidence of preventable diseases and death rates also affect disaster resiliency. Rural community factors that contribute to their limited healthcare access includes healthcare provider shortages, large geographic travel distances to healthcare facilities, transportation issues, and limited opportunities to obtain health insurance coverage. According to the Health Resources and Services Administration (2012) and the American Nurses Association (2012), the number of healthcare providers per capita in rural areas is far below those in urban areas (Table 1).

Table 1

United States Rural/Urban Healthcare Provider Distribution Per Capita

Occupation	Rural Areas	Urban Areas
Physicians	13.2	31.2
Nurse Practitioners (NPs)	2.8	3.6
Physician Assistants (PAs)	2.3	3.4

Note: Providers per 10,000 residents in urban and rural designated areas

Rural residents have higher age-adjusted deaths rates from the five leading causes of death in the U.S. (heart disease, cancer, unintentional injury, chronic respiratory disease, and stroke) and a higher incidence of mortality risk factors such as cigarette smoking, hypertension, obesity, and lack of physical activity compared to urban residents (Garcia et al., 2017). In the context of an emergency/disaster event, rural healthcare shortages accompanied by a higher incidence of chronic illness, results in a limited resources of healthcare providers caring for victims who have a higher incidence of co-morbid conditions.

Rural facilities face a blend of policy, structural, and resource barriers to emergency/disaster preparedness. Financial limitations and competing obligations are frequently viewed as the greatest administrative obstacles to preparedness (Hashikawa & Gold, 2018). Policy changes, such as the critical access hospital designation which requires a limited number of beds has impaired the ability for rural facilities to accept large numbers of patients. According to the Department of Health and Human Services, a CAH is designated by the following:

- Having no more than 25 inpatient beds
- Maintaining an annual average length of stay of no more than 96 hours for acute inpatient care
- Offering 24-hour, 7-day-a-week emergency care
- Being located in a rural area, at least 35 miles drive away from any other hospital or CAH

Designated critical access facilities receive higher reimbursement rates but must comply with the number of bed restrictions to qualify (Putzer, Koro-Ljungberg, Duncan, & Dobalian, 2013). Rural emergency/disaster preparedness remains underfunded, and financial resources are frequently directed towards the day to day operations. Financial investment from federal sources is commonly made in highly populated and urban areas rather than rural regions largely in part to the perception that population dense regions may be at higher risk of experiencing emergency/disaster events (Khan, 2011).

Rural facilities may also lack motivation to dedicate resources to preparedness, as the perceived threat is minimal, or that an event would be so overwhelming with the limited resources that preparation would be useless. A shift of thinking to “expectation preparedness” rather than a probability of occurrence is required for buy-in by stakeholders, especially in rural

areas (Putzer et al., 2013). Expectation preparedness is the acceptance that emergencies/disasters can and will occur anywhere and ensuring a response plan is in place.

Rural Healthcare Providers

Rural healthcare providers are infrequently involved in the planning phases of preparedness, even though their input could be invaluable to foreseeing obstacles and gaps in disaster response capabilities (American College of Emergency Physicians, 2015; Hilton et al., 2015). Traditionally, first responders (law enforcement, firefighters, and emergency medical technicians/paramedics) have been the focus of emergency/disaster preparedness planning. A significant proportion of first responder personnel in rural areas are volunteers with limited formal emergency/disaster training which increases the technical burden on trained personnel including healthcare providers. Rural health organizations are vulnerable as they have lower staffing ratios of healthcare providers and frequently utilize locum healthcare providers who may be unaware of the facility's policies and the individual characteristics of the community. Preparedness activities must also consider the possibility that highly trained response personnel may be injured or absent during an event and pre-determination of who can fill their role is imperative. Rural healthcare facility collaboration with state and regional emergency management entities and surrounding communities through memorandums of understanding can serve to bridge the gaps, fulfill needs, and share the financial burden of emergency/disaster preparedness (Carrier, Yee, Cross, & Samuel, 2012).

Iowa Model of Evidence-Based Practice

Evidence-based practice is utilized in healthcare for the development of policies, protocols, and implementation of best practice. The Iowa Model Revised: Evidence-Based Practice to Promote Excellence in Healthcare (University of Iowa Hospitals and Clinics, 2015)

can be utilized to help guide clinicians and researchers to implement evidence-based practice (Figure 2). The Iowa model is a seven-step process that focuses on knowledge triggers, questions current practices, and improves practices through current research findings.

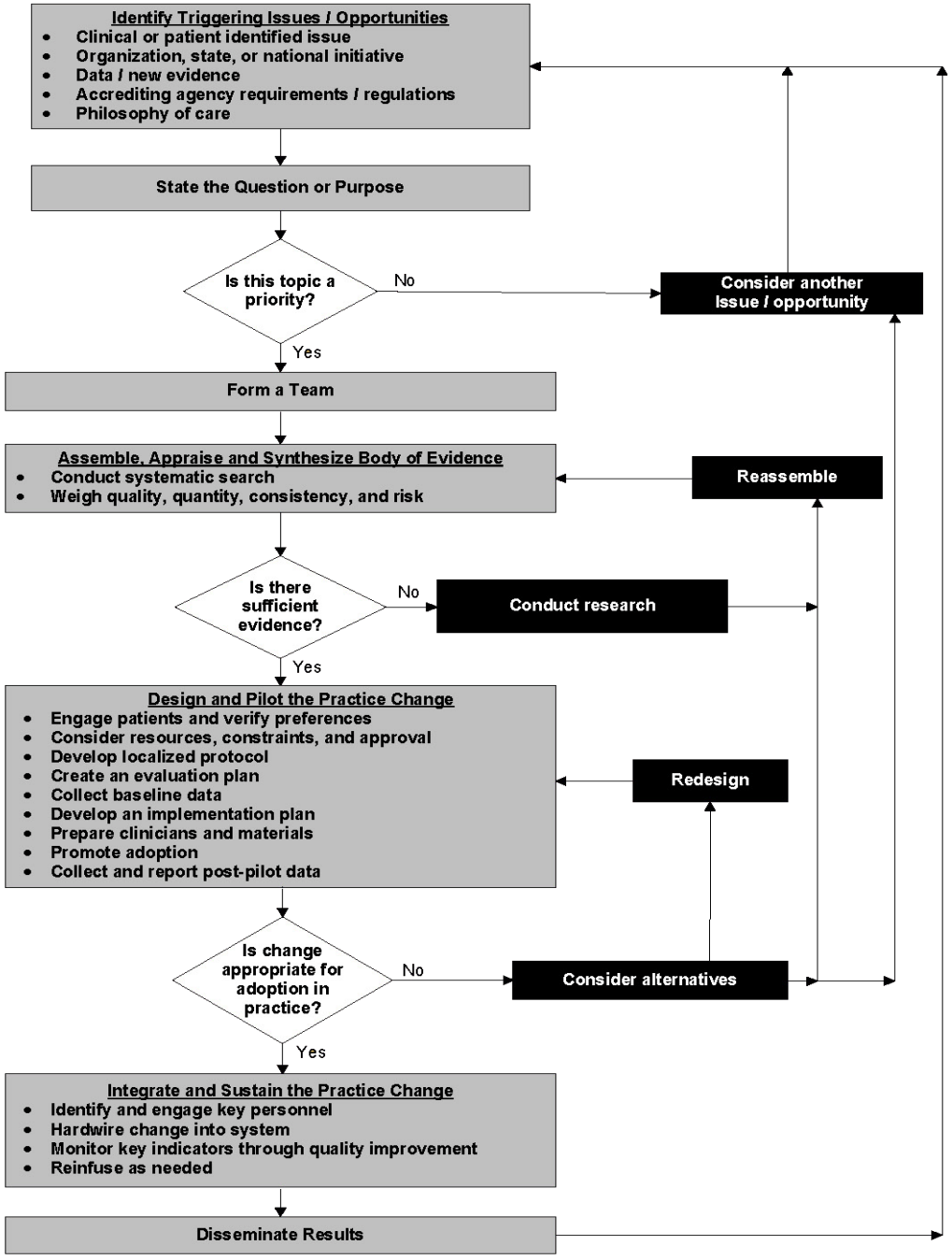

Figure 2. The Iowa Model Revised: Evidence-Based Practice to Promote Excellence in Healthcare. Used/Reprinted with permission from the University of Iowa Hospitals and Clinics (Appendix A); Copyright 2015.

Selection of a Topic

Selection of a topic requires consideration of the magnitude of the problem, its application to practice, contribution to improving care, and availability of evidence (Doody & Doody, 2011). Disasters and emergencies can have significant repercussions on the healthcare system and facility if adequate preparation is not taken to train and prepare. A literature review conducted revealed a multitude of evidence-based articles regarding disaster/emergency preparedness.

Forming the Team

The team is responsible for development, implementation and evaluation; the individuals on the team should be interested stakeholders in the topic (Doody & Doody, 2011). The team of the project is composed of a chair person, two committee members and a graduate appointee. The chair of the project is a practicing nurse practitioner with experience in emergency medicine and extensive experience with the military giving him expertise in disaster/emergency preparedness. The graduate appointee is a faculty member with her PhD in Emergency Management. The remaining committee members include a nurse practitioner who practices rurally, and the other is a nurse practitioner at the participating facility.

Evidence Retrieval and Grading the Evidence

Evidence was found by utilizing electronic databases as described in the review of literature related to the topic. Key words searched include; disaster, disaster preparedness, emergency preparedness, mass casualty, rural disaster preparedness. The evidence received included both qualitative and quantitative data. Criteria for utilization of the evidence was data from a reputable, valid and trusted source along with data that was recently published.

Developing and Implementing Evidence-Based Practice

The goal of this project was to identify the current status of education/training of rural healthcare providers and identify gaps in training/education to better prepare them to care for victims of disasters. The needs assessment was developed to assess these areas and was developed based on evidence collected and a previously utilized survey. Implementation of the needs assessment was completed through collaboration with the facility to distribute the link to the needs assessment to all healthcare providers within the healthcare facility.

Evaluation

Evaluation is a vital element of the theoretical framework and is utilized to address how the evidence can be applied in practice. Evaluation of this project included the review and analysis of the completed needs assessment. Evaluation included the current strengths and gaps in disaster/emergency preparedness at a healthcare facility and recommendations for future disaster/emergency preparedness training/education.

Neuman Systems Model

The Neuman Systems Model (Figure 3) is a systems-based, holistic perspective that provides structure to numerous nursing applications including research, education, practice, and administration. The model provides a grand theory view of health and health stressors on a continuum of wellness at optimum functioning and illness at suboptimal functioning (Smith & Parker, 2015). The focus of Neuman's model is the various reactions that occur when stressors, both internal and external, are encountered by the system. The benefit of using a broad theory allows for creative approach to complex and large-scale problems, such as those encountered during emergencies.

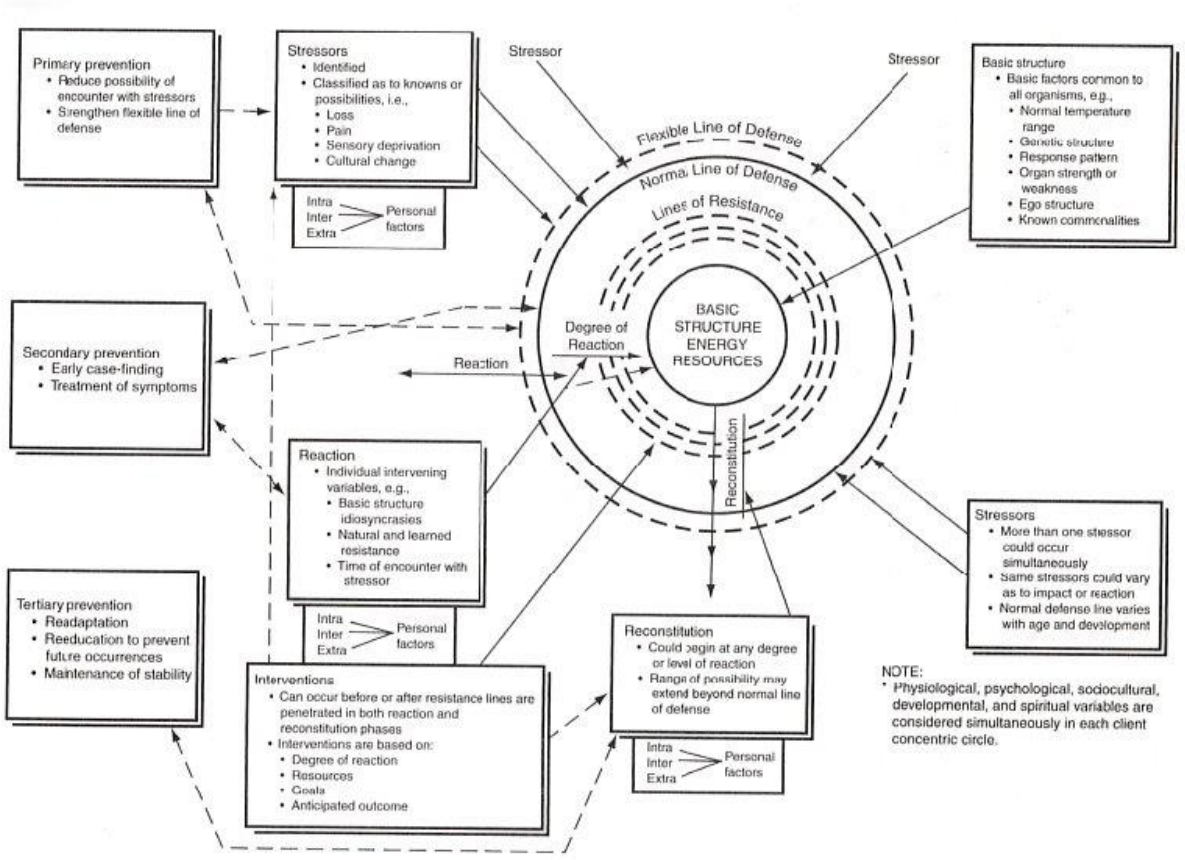

FIGURE 1-3. The Neuman Systems Model. *(Original diagram copyright © 1970 by Betty Neuman.)*

Figure 3. The Neuman Systems Model. Reprinted with permission (Appendix B) from Neuman, B., & Fawcett, J. (2011). The Neuman systems model (5th ed.) Boston, MA: Pearson. p. 13.

The model's core consists of a basic structure and energy resources that are the source of five variables required for survival: physiological, psychological, sociocultural, developmental, and spiritual. As an integrated-interactive paradigm, the system is viewed as greater than the sum of its parts and cannot be delineated into individual pieces. Interdependence among variables exists and "related variables may lose some clarity because they are dynamic and constantly changing, presenting differing appearances according to time, place and the significance of events." (Neuman & Fawcett, 2011, p.9). The variables are in constant interaction with its parts and the environment and tends to navigate the system towards stabilization, higher functioning,

and negentropy. The variables work in tandem to create defense and resistance to stressors that threaten the stability of the system.

The core is surrounded by a series of concentric rings representing the protective mechanisms crucial to the systems well-being and survival. The rings represent previous stressor experiences, mitigation abilities, coping mechanisms, and system impetus to maintain optimum functioning (Neuman & Fawcett, 2011). Nursing interventions introduced to the system to strengthen resistance and defense are classified into three categories: primary, secondary, and tertiary (Copstead & Banasik, 2013, p. 9-10). Primary interventions are those introduced prior to an event or injury with a goal to be preventative in nature by eliminating potential stressors. Secondary interventions reduce the impact of an existing stressor while also easing return to optimal functioning. Tertiary interventions reduce the impact of a long-term stressor, to minimize complications or prevent further instability.

The outermost dashed ring is the flexible line of defense and is first line to encounter a stressor from the environment (Neuman & Fawcett, 2011). Ideally, the flexible line of defense protects the core from sudden, short-term stressors while also preventing assault to the normal line of defense. Fluid and dynamic, the flexible line of defense can be bolstered or weakened dependent upon experience, level of preparation for event, energy and resources available and are most affected by primary prevention interventions.

Behind the flexible line of defense lies the normal line of defense (Neuman & Fawcett, 2011). The normal line of defense is a more static boundary and develops over time in relation to the system's current health status. Once stressors inundate the system beyond the flexible line of defense mitigation abilities, the normal line of defense is penetrated, and a reaction occurs. The reaction results in a destabilization of the system and the initiation of secondary prevention

interventions. A reaction also integrates the use of the lines of resistance, or the last boundaries of protection of the core, which mitigate damage and calls upon internal resources to maintain vital functions to ensure survival. If the stressor penetrates the lines of resistance, tertiary interventions are also implemented.

When the Neuman Systems model is applied to emergency/disaster preparedness the core represents the community served by a healthcare system. The stressors to the system are not limited to emergency/disaster events such as tornado or fire, but also to weak or compromised existing infrastructure, lack of preparedness education, and scarcity of resources. The flexible line of defense represents the primary prevention activities, such as preparedness education, policy and procedure development, and hazard vulnerability reduction strategies. The line of defense and lines of resistance would engage during an emergency/disaster event or hazard and include implementation of emergency/disaster procedures, the response capabilities of the healthcare system, and the ability to meet healthcare demands with available resources.

Logic Model

Due to the biphasic nature of the project and extended timeline, an overall evaluation method and guide was desired to provide a cohesive guide throughout the process. A logic model (Figure 4) was created during the project development to highlight the inputs, activities, outputs, short term outcomes and long-term outcomes. Logic models provide a visual representation displaying relationships between inputs and outputs of a project and a pre-determined approach to the project implementation and evaluation (Moore et al., 2015). The succinct framework was referred to as the project evolved to narrow the focus of the intended result, as emergency/disaster preparedness is a multi-dimensional topic.

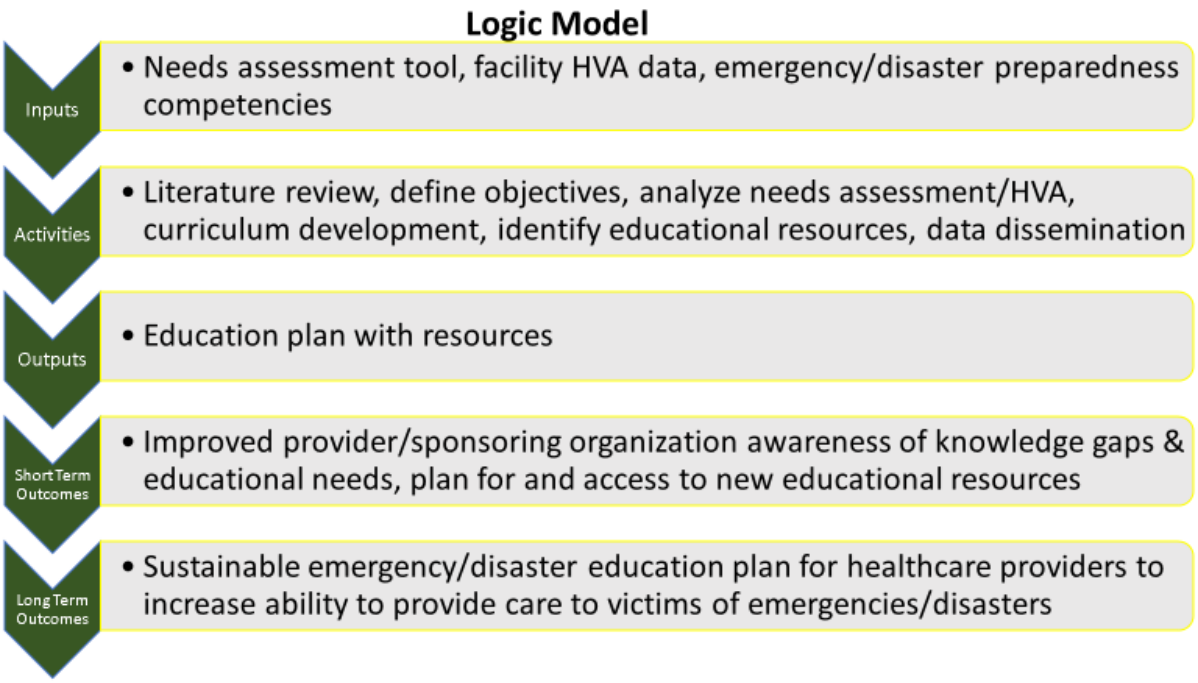

Figure 4. Logic Model

CHAPTER THREE. PROJECT DESIGN

Methods

A needs assessment survey was conducted to assess each healthcare provider's emergency and disaster preparedness at the designated rural healthcare facility (Appendix C). The purpose was to identify healthcare provider emergency/disaster experience and knowledge, preferred education methods, awareness of facility emergency/disaster policies, perceived threat of specific events, and self-perceived ability to respond to an emergency/disaster event. The needs assessment tool was developed after a review of literature focusing on self-perceived healthcare preparedness, the participating healthcare facility's HVA, and a 2008 needs assessment of North Dakota nurse practitioners' self-perceived disaster response knowledge and skill level (Hohman, 2008). Provider licensure, gender, primary area of practice, years of employment at current organization, and years of practice with current licensure were included for sample stratification and analysis of demographic influences on responses.

The needs assessment was analyzed to assess the healthcare providers' current emergency/disaster preparedness, knowledge, and perceived competency with skills and care of potential victims at the facility. The lack of standardized competencies made it difficult to decide which competencies should be included in the needs assessment. In addition, questions about self-perceived competence of performing specific skills were created after a review of recommendations put forth by American College of Emergency Physicians, National Organization of Nurse Practitioner Faculties, and Emergency Nurses Association for Nurse Practitioners.

Protection of Human Subjects

This project was conducted in accordance with the North Dakota State University Institutional Review Board's policies and protection of human subjects. The desired population for the study were all licensed healthcare providers (physicians, NPs, and PAs) at the sponsoring organization. All eligible participants were over the age of 18, and no special populations participated. Participation of the subjects was voluntary, and consent was implied when providers chose to complete the survey. They were able to withdraw from participation at any time without penalty. This information was relayed to participants in the participant information form (Appendix D). There was minimal risk to the participants in this project as the only potential foreseen risk was loss of confidentiality due to the demographic information provided and the limited number of total participants. Potential benefits to the respondents were increased self-awareness of knowledge gaps, increased awareness of facility policy and procedures, and exposure to additional educational opportunities for emergency/disaster preparedness. A letter of approval and participation was obtained from the sponsoring organization (Appendix E).

Adequacy of Protection of Human Subjects

The 35-item needs assessment tool was developed utilizing Qualtrics software (Qualtrics, Provo, UT). Qualtrics is a web-based survey tool that allowed participants to respond anonymously and assisted the study investigator in organizing the data. In order to keep all responses confidential, the Qualtrics survey tool was set to anonymous for the needs assessment responses. Results were securely stored in Qualtrics and access to the results were available only to the coinvestigator and investigator.

International Review Board Approval

Prior to data collection an Internal Review Board approval from North Dakota State University protocol # PH18139 was obtained (Appendix F). The intervention utilized was classified as exempt category #2b: “research involving the use of survey procedures or interview procedures or observation of public behavior for which subjects cannot be identified, or release of the information would not be harmful to the subject”.

CHAPTER FOUR. EVALUATION

Evaluation of Objective One, Two, and Three

The first objective was to identify gaps in healthcare providers' emergency/disaster preparedness knowledge, experience, education level, and perceived level of competency to care for disaster victims and perform skills related to their care within a rural healthcare facility. Questions six through eleven of the needs assessment addressed past experience caring for victims of specific disasters. Needs assessment questions 12-15 addressed familiarity with facility EOP, previous disaster education, and awareness of facility disaster drills/exercises. Finally, questions 16-27 addressed the participants' perceived competency performing specific emergent patient care skills and comfort level with hazard-specific competencies related to care of disaster/emergency victims.

The second objective was to identify the healthcare providers' perceived likelihood that a specific emergency/disaster event will occur in their community as compared to the facility's hazard vulnerability assessment (HVA) and was addressed by question 27. Respondents were assigned a letter A-C to facilitate identification of trends and for comparison to facility HVA while maintaining confidentiality. The sponsoring organization's HVA was evaluated and compared to the needs assessment data of the provider's perceptions of their community's greatest disaster risk.

The third objective, addressed by questions 28-35 of the needs assessment, was to identify barriers to participating in training, preferred methods of learning, and time available to dedicate to emergency/disaster education for providers at a rural healthcare facility. Upon analysis of the data, no trends were identified. The individual educational needs, preferred modality, and perceptions of disaster risk varied among respondents.

Evaluation of Objective Four

The fourth objective was to provide and develop educational recommendations to the sponsoring organization to enhance healthcare providers' skills to care for victims of emergencies/disasters. Objective one through three served to facilitate objective four and the purpose of the project by providing an educational plan to prepare healthcare providers to care for victims of emergencies/disasters.

CHAPTER FIVE. RESULTS

Sample Demographics

The sponsoring organization selected was located in a rurally designated southwest North Dakota community, 175 miles from the nearest level two trauma center. The facility employs three healthcare providers and offers primary care and critical access hospital services. Three healthcare providers responded to the invitation to participate which resulted in a response rate of 100%. Each respondent was assigned a letter for data analysis as occupation/licensure and gender were not reported in order to protect anonymity. Table 2 displays the reported demographics of the survey sample. All three participants reported the clinic as their primary practice setting, and one reported inpatient/acute care hospital/emergency department in addition to the clinic setting. The years of employment at the sponsoring organization were reported as greater than fifteen years (n=1), between eleven and fifteen years (n=1), and less than five years (n=1). Two providers had practiced with their current licensure for greater than fifteen years (n=2) and one has been in practice between eleven and fifteen years (n=1).

Table 2

Sample Demographics

	Provider A	Provider B	Provider C
Practice Setting	Clinic Inpatient Hospital/ Acute Care Emergency Department	Clinic	Clinic
Years Employed at Facility	Less than 5	Greater than 15	11-15
Years in Practice	Greater than 15	Greater than 15	11-15

Previous Experience/Education

Respondents were asked if they have provided care to disaster victims during an actual event. Two providers (Provider B & C) reported previous experience in caring for victims of emergencies/disasters during mass casualty events. Additionally, Provider B reported caring for victims of explosions/bombings, and Provider C reported caring for victims of chemical events. Two respondents reported previous emergency/disaster education and one respondent reported no previous training. Another subset of data evaluated was the modality and the time that had elapsed since the previous education was received to reflect the current resources and frequency of education available.

Table 3

Years Elapsed Since Education Received & Modality of Education

	Provider A	Provider B	Provider C
Biological	No Education	2-4 CR	No Education
Chemical	No Education	5+ CR	5+ CE
Radiological/Nuclear	No Education	No Education	No Education
Mass Casualty	No Education	2-4 CR, HO, MA, FS	2-4 CE
Explosives/Bombs	No Education	5+ CR, HO	No Education
Mass Shooting	No Education	No Education	No Education
Pandemic/Infectious	No Education	2-4 CR, FS	2-4 CE
Natural Event	No Education	<1 CR, FS	2-4 other
Surge Capacity	No Education	No Education	No Education

Note: CE-continuing education, CR-classroom, HO-hands-on, MA-mannequin, FS-full scale

Awareness of Facility EOP and Drill/Exercise Frequency

All three respondents reported familiarity with the sponsoring organization's Emergency Operation Plan (EOP). The three respondents' awareness of their facility's hazard-specific policies and procedures for disaster/emergency responses were mixed (Table 4). Additionally, respondents were asked how often their facility conducted emergency/disaster drills or exercises. Two respondents reported the facility conducts one annual drill per year, and one respondent reported fewer than one per year.

Table 4

Awareness of Facility Hazard-Specific Policy

	Provider A	Provider B	Provider C
Biological	Unaware	Aware	Unaware
Chemical	Unaware	Aware	Unaware
Radiological/Nuclear	Unaware	Aware	Unaware
Mass Casualty	Unaware	Aware	Aware
Explosives/bombs	Unaware	Aware	Unaware
Mass Shooting	Unaware	Aware	Unaware
Pandemic/infectious	Unaware	Aware	Aware
Surge Capacity	Unaware	Aware	Unaware
Natural Event	Unaware	Aware	Aware

Self-Perceived Competence

The healthcare provider's self-perceived competence ratings were elicited regarding three topics which included specific patient care skills, hazard-specific care, and their overall perceived ability to respond during an emergency/disaster event. Nine patient care skills were identified from competencies set forth by the American College of Emergency Physicians, National Organization of Nurse Practitioner Faculties, and Emergency Nurses Association for Nurse Practitioners and were utilized for the assessment of competence performing discipline-specific skills. The skills assessed were the ability to respond to changes in physiologic status, use of personal protective equipment (PPE), triaging, airway management, stabilization of circulatory status, wound management, C-spine stabilization, care for special needs populations, and response to mental health needs. The levels of self-perceived competence in performing these

skills was rated on a 6-point Likert scale, and averages were calculated to identify trends (Table 5). Overall, the healthcare providers rated their skill competence on average 4.59 out of 6, indicating that the providers feel extremely comfortable performing the skills.

Table 5

Discipline-Specific Skill Self-Perceived Competence

	Provider A	Provider B	Provider C	Average
Physiologic Status	5	5	3	4.33
PPE	4	6	2	4
Triage	4	5	4	4.33
Airway	5	6	5	5.33
Circulatory Status	5	6	5	5.33
Wounds	3	5	5	4.33
C-spine	5	5	5	5
Special Needs	4	5	4	4.33
Mental Health	4	5	4	4.33
Overall Average	4.33	5.33	4.11	4.59

Note: On 6-point Likert scale-1=" Very Uncomfortable" to 6=" Very Comfortable"

Hazard-specific competence in caring for victims affected by biologic, chemical, radiological, nuclear, mass casualty, explosives/bombs, mass shooting, pandemic/infectious, surge capacity, and natural events were assessed using a 6-point Likert scale, and averages were calculated to identify trends (Table 6). Overall, the healthcare providers rated their hazard-specific competence on average 2.7 out of 6, indicating a lack in confidence in caring for victims of hazards.

Table 6

Hazard Specific Self-Perceived Competence

	Provider A	Provider B	Provider C	Average
Biological	3	3	1	2.33
Chemical	3	3	2	2.67
Radiological/Nuclear	3	3	1	2.33
Mass Casualty	3	3	3	3
Explosives/bombs	3	3	2	2.67
Mass Shooting	3	3	2	2.67
Pandemic/infectious	3	3	3	3
Surge Capacity	3	3	2	2.67
Natural Event	3	3	3	3
Overall Average	3	3	2.11	2.7

Note: On 6-point Likert scale ranging from 1= "Not Confident At All" to 6= "Completely Confident"

The respondents were also asked to rate themselves as expert, proficient, competent, advanced beginner, or novice regarding their overall self-perceived competency in an emergency/disaster response. Expert was defined as having advanced emergency/disaster preparedness, participation in leading disaster drills, participation in one or more responses to an actual event, having assumed a leadership role in directing response to a drill or actual event, and ability to delegate responsibilities and lead response. Proficient was defined as having had advanced emergency/disaster preparedness education, participation in four or more drills, and ability to assume leadership in directing response to an emergency/disaster. Competent was defined as having emergency/disaster preparedness education, having participated in two to three drills, and would feel comfortable in addressing emergency/disaster needs. Advanced beginner

was defined as having basic education and participation in one or no disaster drills. Novice was defined as having no previous emergency/disaster education or experience. The healthcare providers rated themselves as follows:

- Provider A - competent
- Provider B - competent
- Provider C - advanced beginner

Experience, Education, & Awareness Effect on Self-Perceived Competence

Perceived competence scores were cross-tabulated against experience, previous education, and awareness of policies for analysis (Table 7). This method of analysis was chosen to further extrapolate the influences of demographics and education/experience on self-perceived competence and comfort ratings.

Hazard Specific Perceived Threat & HVA

The sponsoring organization's HVA is categorized into natural, human, and technological events with 41 specific threats. Natural events included were pandemics, multiple specific weather, fire, and geological events. Human events included were bomb threats, civil disturbances, forensic admission, hazmat exposure-external (chemical), hostage situations, labor action, mass casualty, and biological terrorism. Technological events included were facility structural and communication failures and disruption of supplies.

Table 7

Experience, Previous Education, & Awareness of Policy vs. Competence

	Provider A	Provider B	Provider C
Practice Years	> 15	> 15	11-15
Experience Providing Care to Event Victims	No	Yes	Yes
Previous Emergency/Disaster Education	No	Yes	Yes
Aware of Facility EOP	Yes	Yes	Yes
Aware of Hazard Policies*	0/9	9/9	3/9
Skills Competence**	4.33/6	5.33/6	4.11/6
Hazard-Specific Competence***	3/6	3/6	2.11/6
Overall Competency Rating	Competent	Competent	Advanced Beginner

Note: "*Aware of Hazard Policies in nine hazard-specific domains identified in needs assessment
Note: **On 6-point Likert scale-1=" Very Uncomfortable" to 6=" Very Comfortable"
Note: ***On 6-point Likert scale ranging from 1= "Not Confident At All" to 6= "Completely Confident"

The needs assessment asked respondents which emergency/disaster events they felt were most likely to occur in the community in which they were employed (Table 8). All providers identified mass casualty as likely events to occur at their facility. Additionally, all providers responded that biologic, radiologic/nuclear, explosives/bombs, and pandemics/infectious events were unlikely to occur at their facility. In contrast, the facility's HVA identified natural events (ice storm, snow fall, tornado, temperature extreme, blizzard, wildfire, and epidemic) as the most likely to occur in the community. The second most likely events identified by the HVA were hazmat exposure (chemical) and technological events.

Table 8

Hazard-Specific Perceived Community Threat

	Provider A	Provider B	Provider C
Biological	Unlikely	Unlikely	Unlikely
Chemical	Unlikely	Likely	Likely
Radiological/Nuclear	Unlikely	Unlikely	Unlikely
Mass Casualty	Likely	Likely	Likely
Explosives/bombs	Unlikely	Unlikely	Unlikely
Mass Shooting	Unlikely	Likely	Unlikely
Pandemic/infectious	Unlikely	Unlikely	Unlikely
Surge Capacity	Likely	Likely	Unlikely
Natural Event	Unlikely	Likely	Likely

Preferences for Future Emergency/Disaster Education

Previously, two providers had participated in emergency/disaster training within the sponsoring organization. One respondent reported a general lack of educational programs as a barrier to participation in previous training opportunities. A free text field was provided in the survey to allow providers to cite their perceived needs to respond to an emergency/disaster. The responses included “routine refreshing of information, yearly training, and higher quality training in various scenarios”. The provider’s preferences for time, day of the week, and method in which to receive education were mixed. The preferred modalities of education identified by the providers included video, classroom, conference, internet-based, mannequin, and telehealth. Healthcare provider responses indicated a desire to participate in future education with all respondents stating they would attend two to three education sessions annually. A free text field

for the providers to indicate how much time they would be willing to dedicate to disaster education. The responses included: “whatever is needed, several hours a week, and six”.

Education Plan Development

Once the data were reviewed, a comprehensive training program was recommended in conjunction with competencies and topics identified in literature. The identification of online and distance education resources was conducted based upon the project’s literature review. A review of internet resources, electronic mail, and phone correspondences with state and federal agencies occurred. The resources were thoroughly evaluated by the researcher for learning objectives, cost, applicability to cohort, availability of continuing education credits, travel distance, and date of development. The goal was to include multiple resources to address the varying educational preferences and learning styles of healthcare providers.

CHAPTER SIX. DISCUSSION AND RECOMMENDATIONS

Interpretation of Results

A desired outcome of the needs assessment implementation was to increase the healthcare providers' awareness of their personal emergency/disaster abilities and knowledge gaps. During the first phase of the project, levels of emergency/disaster preparedness were measured by the healthcare providers' self-reported competency in discipline-specific skills and hazard-specific skills in regard to management of disaster victims. The high scores reported in discipline-specific competencies (assessment and management of physiologic status changes, personal protective equipment (PPE), airway patency, circulatory status, wounds, and cervical spine) are likely due to the frequency of such skill use in everyday practice in their facility's emergency department or clinical setting. Hazard-specific comfort ratings, however, were lower at 2.77 on a six-point Likert scale, indicating reduced confidence in this domain, which could potentially translate into poorer performance during a disaster event. Additionally, two respondents labeled themselves as competent, and one labeled themselves as an advanced beginner which is congruent with the findings in the literature.

The literature review cited age, healthcare specialty, organizational leadership attitudes, previous emergency/disaster training, and experience in caring for victims during an actual event as the factors that correlate with variances in disaster preparedness levels (Labrague et al, 2017). The needs assessment competency ratings were compared with participants' years of current licensure, previous experience in caring for emergency/disaster victims, previous emergency/disaster training, and awareness of their facility's disaster policies. Due to the small number of participants, statistical analysis was not performed on the data. However, there appeared to be an observed positive correlation within the group of participants between number

years of practice and an increased level of self-perceived competence. Education and previous experience in caring for disaster event victims did not appear to influence competency scores, as evidenced by the provider with the second highest self-rated competency having no experience in caring for disaster victims. One of the respondents with the highest self-reported competency also denies knowledge of any facility hazard-specific policies.

The needs assessment revealed a lack of access to quality training programs as the main barrier to emergency/disaster education for the healthcare providers. Scott et al. (2012) cite that organizational priorities are likely geared towards the daily patient care quality measures and that decision makers are more willing to provide education for patient care over events that may never occur. Of note, the respondents of the needs assessment reported willingness to dedicate up to several hours per week for training, indicating that education would likely be well-received. The education modalities reported in the needs assessment varied widely without an aversion to any one method.

After the survey results were reviewed and interpreted, the results and recommendations were presented to the sponsoring organization's safety committee and healthcare providers via a verbal presentation, and education plan/resources were provided in electronic format. Overall competency and comfort scores, HVA comparisons, experience/education received, and awareness of facility policy was reported as aggregate data to the facility's stakeholders to protect the participant's anonymity. Verbal feedback at the conclusion of the presentation was encouraged from the presentation attendees. The theme of discussion was an acknowledgement of the general lack of educational opportunities in emergency/disaster preparedness and a desire to create and implement an education plan for their healthcare providers. The effectiveness of training provided was not expected to be evaluated as part of the project, as the education plan

was developed to occur over the course of a year which is beyond the time allowed for the coinvestigator's participation.

The project included the development of an individualized education plan for the sponsoring organization's healthcare providers. As previously cited in the literature, a strong correlation exists between a provider's education/training practices and improved workforce performance (Miner et al, 2005). A multi-discipline education framework was developed in partnership with the emergency preparedness committee member in accordance with industry standards (Appendix G). Initially the education plan development was guided by the identified knowledge gaps, barriers to education, preferred modality of education, and willingness of time available for disaster education. Overall, the emergency/disaster preparedness education domains were interrelated, and an all-encompassing education plan was decided to be most appropriate for the healthcare providers (Appendix H). Although a healthcare provider may report competence in a domain, a comprehensive plan allowing providers to place emphasis on individual knowledge gaps while also providing resources to review and refresh previously learned skills is crucial. Current research indicates there is great value in repetition to combat the decay of knowledge over time (Miller, Rambeck, & Snyder, 2014). The education plan was developed to be implemented over a year at the suggestion of the emergency preparedness committee member who is a subject matter expert. The MACH model (Miner et al, 2005) was created for the development of public health workforce training and was utilized in evaluation of the development process to ensure a systematic, effective training plan development with incorporation of healthcare provider and sponsoring organization preferences and capabilities. The competencies cited in the literature were analyzed by the researcher for commonalities and differences in content, intended audience, learning objectives, development methods,

professional/governmental organization involvement in development, date of development, performance objectives, and evaluation methods. The Development of National Standardized All-Hazard Disaster Core Competencies for Acute Care Physicians, Nurses, and EMS Professionals (Schultz, Koenig, Whitehead & Murray, 2012), Security Target Capabilities List (United States Department of Homeland Security, 2007), and National MRC (Medical Reserve Corps) Volunteer Training Plan (Division of the Civilian Volunteer Medical Reserve Corps & National Association of County & City Health Officials, 2015) were chosen for guidance during the education plan development. The three competencies were analyzed for overlap in domain key words and content and then compared to relevant literature findings. The resulting synthesis yielded 11 domains, 20 competencies, and multiple performance objectives utilizing Bloom's taxonomy with special attention placed on language to transcend boundaries of specific licensure and disciplines to meet professional needs of varying specialty and experience.

Additionally, the original project design intended for the needs assessment data to guide the education modality selection. Due to the variability in responses and the evidence cited in the literature, primarily online education resources were utilized for the purpose of this project. The lack of feasibility for distance learning due to limited staffing numbers was felt to limit the educational modalities primarily to online modules, books, and local/facility drills and exercise. A review of multiple websites and the education offerings resulted in utilization of material from 14 agencies. Instructions for access and website links to the identified resources were organized in a table (Appendix I). Consideration criteria for education resources included free of charge or nominal fee, offering of continuing medical education credits, developed by professional organizations or federal agencies, and distant learning option or offering of education within the state of North Dakota. Further educational modalities should be developed by the facility

utilizing the annual training plan provided. Evaluation of the effectiveness, efficiency, and overall healthcare provider satisfaction with the plan has yet to be completed due to the project's time constraints. However, the participating facility can evaluate the disaster education plan as they deem appropriate.

Limitations

Throughout the phases of the project, areas of limitation were identified. The project development and data analysis were based upon several assumptions given the small population size which included that respondents were honest, the fear of confidentiality breech did not influence their responses, and they had a sincere interest in participating in the project. In addition, methodological limitations were identified which included a small sampling size and the inability to utilize statistical analysis. Even though global generalization about rural healthcare disaster preparedness cannot be made, the data obtained was significant to the sponsoring organization. Researcher personal bias and researcher knowledge base likely affected the education plan and resource content, as sources found to be of greater interest aesthetically (video demonstrations, interactive quizzes, visual diagrams/tables) were included in an attempt to facilitate ongoing interest and engagement of learners.

Recommendations

The sponsoring organization has verbalized intent to implement the disaster preparedness education plan. The researcher recommends healthcare provider encouragement and provision of access to emergency/disaster education on an on-going basis to further develop a culture of quality, safety, and self-reflection. A periodic update of competencies and education resources should occur annually to ensure sustainability and continued quality of the education plan. Based on the results of the needs assessment and the above discussion, a suggested training/exercise

schedule includes one educational plan domain per month. Utilization of this training schedule strengthens the providers' knowledge and skills and as a result improves disaster/emergency preparedness at the healthcare facility.

Participation in volunteer opportunities and healthcare coalitions for healthcare providers and the sponsoring organization would provide additional opportunities for training, facilitate knowledge sharing, and reduce the financial burden of emergency/disaster preparedness activities for healthcare providers and the sponsoring organization. One option would be for healthcare providers to volunteer for the North Dakota's Public Health Emergency Volunteer Reserve/Medical Reserve Corps (PHEVR-MRC) which provides training and notifies providers when medical assistance is needed within the state and nationwide. In areas where education sources are limited, membership with medical reserve organization serves to expand training while also providing an opportunity to serve other communities during times of crisis.

The modification of the need assessment to fit organizational goals and priorities creates a viable template for practice improvement projects in other rural healthcare facilities. The inclusion of all healthcare facilities within a specified rural region could serve to ensure all facilities share a commonality in knowledge base resulting in a more effective response. It is recommended that the education plan and resources be modified by a panel of representatives from each facility using the needs assessment data, an evidence-based framework, and shared resources to offer meaningful, effective emergency/disaster preparedness education.

Implications for Practice

The practice improvement project served to highlight knowledge gaps and provided insight on disaster education barriers and facilitated the healthcare provider's self-awareness of their emergency/disaster preparedness. Based on the data collected, the rural healthcare facility

and their providers will be better prepared to care for victims of emergencies and disasters after implementation of the proposed training/education plan. The project also served to add more information to the limited existing evidence-based practice literature regarding rural healthcare emergency/disaster preparedness.

Evidence-based practice is the dissemination of information to provide awareness, promote advancement of practice, and encourage feedback and further inquiry (Melnyk & Fineout-Overholt, 2015). Dissemination of this practice improvement project took many forms and provided to various audiences. A three-minute video was created for the general public outlining purpose, findings, and further recommendations for healthcare provider emergency/disaster preparedness and was posted to websites and distributed to preceptors and colleagues of the coinvestigator. Poster presentations, application of theory, and recommendations also occurred during the 2017 North Dakota Diabetes Symposium and a 2018 Research Day at a local healthcare organization. In addition, the researcher plans to submit a summary of the survey findings to the Journal of Rural Health, the Journal of Emergency Management & Disaster Medicine, and/or the Online Journal of Rural Nursing and Health Care peer-reviewed journals for publication.

The dissemination of the needs assessment findings and recommendations was also beneficial to the participating facility's safety committee's non-healthcare provider staff. Verbal feedback from the non-provider committee members included concerns about the lack of healthcare providers' awareness of their facility's disaster policy and knowing that advanced skills such as endotracheal intubation are not included in a majority of nurse practitioner and physician assistant graduate education programs. The differences noted between the facility's HVA and the healthcare providers' perceived threats also serves to encourage collaboration and

supports the literature recommendations that healthcare providers need to be included in emergency/disaster planning.

Implications for Future Research

The limited research available regarding rural healthcare disaster preparedness illustrates the need for ongoing contributions to its knowledge base. The review of literature and survey results also underscores the critical value of healthcare provider emergency/disaster preparedness education. However, more evidence is needed to further the body of knowledge and determine best practices to achieve education curriculums that translate into healthcare provider ability during emergency/disaster events. Similar projects within rural areas are recommended in conjunction with implementation of a regional multi-facility coalition to help unite facilities and strengthen disaster response capabilities.

Based upon the practice improvement project data and barriers identified throughout the process, the coinvestigator recommends a call to action on a federal and professional healthcare organization policy level in regard to development of a universally accepted competency set. A continuation of the current process of new competency development in absence of collaboration towards universal acceptance and validation wastes energy and resources when tools for action are imperative now. Ongoing support of the IOM's (2012) recommendation for development of criteria and metrics to measure the effectiveness and efficiency of emergency/disaster preparedness education is recommended for ongoing development of healthcare disaster preparedness. In addition, the validation of an accurate evaluation tool to assess the level of healthcare provider preparedness through objective and self-reporting measures is crucial for better identification and development of universal disaster competencies across professional healthcare organizations.

Application to Doctor of Nursing Practice Roles

As a Doctor of Nursing Practice (DNP) prepared provider, there is a responsibility to continue to advance the roles of advanced practice nursing and advocate for change to ensure we are practicing to the best of our ability. By completing the needs assessment regarding disaster preparedness of rural healthcare providers it became evident that nurse practitioners may not be prepared for disasters as the participating healthcare providers reported none to limited experience or education/training in disaster/emergency preparedness. Although this cannot be said with certainty due to the limited number of NPs that completed the survey, APRNS need to continue to evaluate the level or preparedness of their profession by expanding on the existing research, policy development, current practice, and continuing/developing education in all levels of nursing (Veenema et al., 2016).

The appraisal of healthcare providers' emergency/disaster competencies, CMS emergency preparedness regulations, in conjunction with multiple federal/state/local governmental entities tasked with preparedness activities can serve for future advocacy for change. Interprofessional collaboration with sponsoring organizations, federal and state authorities, and academia can improve the ability to communicate and promote change through inquiry and knowledge sharing. Population health and prevention is the underlying driver for the DNP role, and the ultimate endpoint outcome for healthcare emergency/disaster preparedness is to decrease morbidity and mortality during emergency/disaster events.

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APPENDIX A. PERMISSION TO USE IOWA MODEL

Permission to Use The Iowa Model Revised: Evidence-Based Practice to Promote Excellence in Health Care

Kimberly Jordan - University of Iowa Hospitals and Clinics <noreply@qualtrics-survey.com>

Sat 3/17/2018 11:57 AM

To: Abrams, Amanda <amanda.kuntz@ndsu.edu>;

You have permission, as requested today, to review and/or reproduce *The Iowa Model Revised: Evidence-Based Practice to Promote Excellence in Health Care*. Click the link below to open.

The Iowa Model Revised: Evidence-Based Practice to Promote Excellence in Health Care

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Citation: Iowa Model Collaborative. (2017). Iowa model of evidence-based practice: Revisions and validation. *Worldviews on Evidence-Based Nursing, 14(3), 175-182. doi:10.1111/wvn.12223*

> In written material, please add the following statement:
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Please contact UIHCNursingResearchandEBP@uiowa.edu or 319-384-9098 with questions.

APPENDIX B. PERMISSION TO USE NEUMAN'S SYSTEMS MODEL

Jacqueline Fawcett Jacqueline.Fawcett@umb.edu

Wed 1/24, 7:18 PM
Abrams, Amanda
Inbox

Ms. Abrams,
Permission granted.
Best regards, Jacqueline Fawcett

Jacqueline Fawcett, RN; PhD; ScD (hon); FAAN; ANEF
Professor, Department of Nursing
University of Massachusetts Boston

January 23, 2018

Ms. Jacqueline Fawcett, FAAN, PhD
PO Box 1156
Waldoboro, MD 04572

Dear Ms. Fawcett:

I am in the process of completing my dissertation in preparation to receive a Doctor of Nursing Practice degree. I would like your permission to include the following material in this project: Neuman Systems Model and the theories' application to my project.

The material request will be cited from:
Neuman, B., & Fawcett, J. (2011). The Neuman systems model (5th ed.). Boston, MA: Pearson.

The title of the dissertation is "Emergency/Disaster Preparedness in Rural Health Care Systems" and will be submitted to the graduate faculty of North Dakota State University of Agriculture and Applied Science in partial fulfillment of the requirements for the degree of Doctor of Nursing Practice. The paper will be available to the graduate school and submitted to ProQuest.

If you do not control the copyright on all of the above-mentioned material, I would appreciate any contact information you can give me regarding the proper rights holder(s), including current address(es). Otherwise, your permission confirms that you hold the right to grant the permission requested here.

I would greatly appreciate your consent to my request. If you require any additional information, please do not hesitate to contact me. I can be reached at:

Amanda Abrams, BSN, RN, DNP-student
1936 Villas Court
Dickinson, ND 58601
(701) 590-5591
amanda.kuntz@ndsu.edu

Sincerely,

Amanda M. Abrams, BSN, RN, DNP-student

APPENDIX C. NEEDS ASSESSMENT

Emergency/Disaster Preparedness
Needs Assessment

Section 1 Demographic Information

1.) What type of provider are you?
   a. Physician
   b. Nurse Practitioner
   c. Physician Assistant

2.) What is your gender?
   a. Male
   b. Female

3.) What setting do you primarily practice in? **(Please check ALL that apply)**
   a. Clinic
   b. Inpatient Hospital/Acute Care
   c. Walk-in Clinic/Urgent Care/Same Day Clinic
   d. Emergency Department

4.) How many years have you been employed in your current position?
   a. Less than 5 years
   b. 5-10 years
   c. 11-15 years
   d. Greater than 15 years

5.) How many years have you practiced with your current licensure?
   a. Less than 5 years
   b. 5-10 years
   c. 11-15 years
   d. Greater than 15 years

Section 2 Disaster Experience

The following questions refer to the care of victims/patients during the active response phase of a disaster/emergency event.

6.) Have you cared for victims of a disaster?
   a. Yes
   b. No

7.) Have you cared for patients affected by biological agents?
   a. Yes
   b. No

7.) Have you cared for patients affected by chemical agents?
   a. Yes
   b. No

8.) Have you cared for victims of a mass casualty event?
   a. Yes
   b. No

9.) Have you cared for victims of explosives/bombings?
   a. Yes
   b. No

10.) Have you ever cared for victims of mass shooting?

a. Yes
b. No

11.) Have you ever cared for victims of pandemic?

a. Yes
b. No

Section 3 Education and Policy

12.) Are you familiar with what your role is according to the facility Emergency Operation Manual in the event of a disaster/emergency event?

a. Yes
b. No

13.) Have you received any education/training in the past in regard to disaster/emergency events?

a. Yes
b. No

14.) **If YES to the above question, please select all that apply for the type of event you have received education for.**

Biological/Chemical/Radiological-Nuclear/Mass Casualty/Explosives-Bombings/Mass Shooting/Pandemic-Infectious/Natural Event (i.e. Tornado/Fire/Thunderstorm)/Surge Capacity

i. I received this training /
    1. Within the last year
    2. Within the last 2-4 years
    3. 3 or more years ago

ii. I received this education through
    1. CD-ROM
    2. Classroom lecture
    3. Hands on practice
    4. Internet based
    5. Literature review/Continuing Education
    6. Mannequin Simulators
    7. Telehealth
    8. Full Scale Disaster Drills
    9. Other_____
    10. 2-4 years ago
    11. 5 or more years ago

15.) Does your facility conduct annual disaster drills (i.e. test disaster plans and procedures, including personnel education, facilities and materials)?

a. Yes, annually
b. Yes, more than once a year
c. Yes, less than once a year
d. No

Section 4 Discipline-Specific Skill Competencies

Of the below listed competencies put forth by the, American College of Emergency Physicians, National Organization of Nurse Practitioner Faculties, Emergency Nurses Association for Nurse Practitioners please rate how comfortable you are with performing the skills.

(6-point Likert scale-1="Very Uncomfortable" to 6="Very Comfortable")

16.) Responding to the rapidly changing physiological status of disaster victims based on the type of event (I.E. Change in mental status, changes in respiratory status, change in cardiovascular status, crush injury, explosive injuries, penetrating trauma)

17.) Ability to prevent and mitigate risk to self and other through appropriate decontamination and appropriate use of Personal Protective Equipment (PPE) including providing treatment while utilizing PPE?

18.) Triaging patients of a disaster event in order to maximize survivability according to your facilities triage process (I.E. START, JumpStart)

19.) Assessing and Intervening with breathing and airway management? (I.E. Placement of advanced airway, oral airway, nasal airway, high flow oxygen)

20.) Assessing and Intervening on circulatory status? (I.E. Application of tourniquet, intraosseous access, intravenous access)

21.) Assessing and treating lacerations and wounds of varying degree? (I.E. Suture repair, debridement, treating burns, amputations, explosion/blast injury, crush injury)

22.) Clinically assessing and managing cervical spine? (I.E. C-spine precautions, spinal immobilization)

23.) Reducing and immobilizing fractures and dislocations

24.) Management of patients with special needs (I.E. Pediatrics, geriatrics, cultural, mental disability)

25.) Management and awareness of mental health needs of self/staff/patients/families (I.E. Increased stress, anxiety)

26.) Select the definition below which illustrates how competent you feel to responding during a disaster event?

a. **Novice**- (No education or experience)
b. **Advanced Beginner**-(Basic education and participation in 2 or less disaster drills/ responses)
c. **Competent**-(Disaster preparedness education and participation in 3 or more disaster drills or responses; would feel comfortable addressing disaster needs)
d. **Proficient** -(Advanced disaster preparedness education and participation in four or more disaster drills or responses, would be able to assume leadership in directing response to a disaster)
e. **Expert-** (Advanced disaster preparedness, participation in leading disaster drills, participation in one or more responses to actual disaster, have assumed leadership role in directing response to disaster drill or actual event, would be able to delegate responsibilities and lead response)

Section 5 Perceived Threat

27.) What emergency/disaster events do you feel are most likely to occur in the community in which you work?

Biological/Chemical/Radiological-Nuclear/Mass Casualty/Explosives-Bombings/Mass Shooting/Pandemic-Infectious/Natural Event (i.e. Tornado/Fire/Thunderstorm)/Surge Capacity

Likely_____ Unlikely_____

i. Are you aware of the policy in place at your facility for the care of these patients?
Yes_____ NO_____

ii. To what extent do you feel you would be confident in caring for victims related to biologic events?
(6-point Likert scale- 1="Not Confident At All" to 6="Completely Confident"

Section 6. Future Considerations

28.) Have you participated in disaster training exercises within your facility?
a. Yes
b. No

29.) If No, what has been a barrier to you participating?
a. Lack of time to complete education
b. General lack of education programs
c. Lack of qualified staff to teach the education
d. Lack of funding for education
e. Lack of resources to obtain education (ex: Internet access, computers, audiovisual)
f. Does not apply, as I participate in disaster preparedness education
g. Other (specify) _____

30.) In order to respond to a disaster event as a provider, what type of additional education do you believe you need?

31.) What day of the week do you prefer to participate in disaster preparedness education?

32.) What time of day would you prefer to participate in disaster preparedness education?
a. 0700
b. 1200
c. 1700
d. Other (Specify)_____

33.) What is your preferred method for receiving disaster preparedness education?
(Please check all that apply)
a. CD-ROM/Video
b. Classroom lecture
c. Internet Based
d. Literature Review
e. Mannequin simulation
f. Seminar/conference
g. Tele health
h. Full scale disaster drills
i. Other _____

34.) How much time would you be able to dedicate to each disaster preparedness educational event/ training?

35.) How many disaster preparedness educational events/trainings would you be willing to participate in per year?
a. 1
b. 2
c. 3
d. Other_____

APPENDIX D. SURVEY LETTER OF PARTICIPATION

NDSU **North Dakota State University**

Department of Nursing
Campus Address
NDSU Dept. 2670
PO Box 6050
Fargo, ND 58108-6050
701.231.7395

Emergency/Disaster Preparedness in Rural Healthcare

My name is Amanda Abrams. I am a graduate student in Nursing at North Dakota State University, and I am conducting a research project to determine the educational needs in regards to Disaster Preparedness specifically in rural healthcare providers. It is our hope, that with this research, we will then be able to conduct/create an educational tool for disaster education.

Because you are a provider at Southwest Healthcare Services, you are invited to take part in this research project. Your participation is entirely your choice, and you may change your mind or quit participating at any time, with no penalty to you.

It is not possible to identify all potential risks in research procedures, but we have taken reasonable safeguards to minimize any known risks. These known risks may include: loss of confidentiality due to the demographic information provided

By taking part in this research, you may benefit by receiving education related to care of patients during a disaster. However, you may not get any benefit from being in this study. Benefits to others are likely to include improved care of patients who present to your facility in the event of a disaster.

It should take about 5-10 minutes to complete the questions about disaster preparedness. Use the attachment to this email to enter the survey.

This study is anonymous. That means that no one, not even members of the research team, will know that the information you give comes from you.

If you have any questions about this project, please contact me at amanda.kuntz@ndsu.edu, or contact my advisor Adam Hohman at adam.hohman@ndsu.edu

You have rights as a research participant. If you have questions about your rights or complaints about this research, you may talk to the researcher or contact the NDSU Human Research Protection Program at 701.231.8995, toll-free at 1-855-800-6717, by email at ndsu.irb@ndsu.edu, or by mail at: NDSU HRPP Office, NDSU Dept. 4000, P.O. Box 6050, Fargo, ND 58108-6050.

Thank you for your taking part in this research. If you wish to receive a copy of the results, please email amanda.kuntz@ndsu.edu

APPENDIX E. SPONSORING ORGANIZATION LETTER OF PARTICIPATION

Good Morning,

I'm a nursing faculty member at North Dakota State University and I have a graduate student in your area who would like to perform a practice improvement project in the context of disaster preparedness in rural healthcare settings.

Historical and current literature report an ongoing gap in disaster preparedness knowledge among health care providers. All providers, regardless of practice setting will be affected by a disaster/mass casualty event; particularly in a rural setting. As part of the North Dakota State University Doctor of Nursing Practice (DNP) curriculum, graduate students are required to complete a dissertation/practice improvement project. A current proposal by DNP student Amanda Abrams is to assess disaster response/preparedness training of health care providers at a single rural clinical site. Based on the assessment, the intention would be to implement disaster preparedness education intervention which is proposed to be accomplished as follows:

1) Administer a needs assessment in regard to disaster preparedness education/training of rural healthcare providers which would include nurse practitioners, physician assistants and physicians.

a. Conduct a needs assessment of all nurse practitioners, physician's assistants and doctors in your facility. The assessment will be conducted via an email survey utilizing Qualtrics to assess their knowledge of disaster preparedness and care to victims of a disaster as a first receiver.

2) Implement an education module/program to address training needs identified by needs assessment.

a. Develop and provide training/education based on the needs identified. Education would be provided in a manner that will be best received by the end users/providers which will be identified in the needs assessment (i.e. hands on training, online modules, conference, etc.)

3) Develop an educational tool/training that could be replicated/utilized on a yearly basis by your facility.

4) Consider incorporation of previously identified needs/areas of improvement that the organization has already identified

Currently, I have another student performing a similar project in Perham, MN and it has been well received by the staff/management there. I appreciate your time.

Sincerely,

Adam Hohman, DNP, APRN, FNP-BC

North Dakota State University

Assistant Professor of Practice

School of Nursing

p: 701-231-8016

email: adam.hohman@ndsu.edu

Lsaknapp, RN Clinic Manager
Southwest Healthcare Services
802 2nd St NW
Bowman, ND 58623
10/25/2017

APPENDIX F. INTERNAL REVIEW BOARD APPROVAL

NDSU NORTH DAKOTA STATE UNIVERSITY

December 21, 2017

Dr. Adam Hohman
Nursing

Re: IRB Determination of Exempt Human Subjects Research:
Protocol #PH18139, "Emergency/Disaster Preparedness in Rural Healthcare"

Co-investigator(s) and research team: Amanda Abrams
Certification Date: 12/21/2017 Expiration Date: 12/20/2020
Study site(s): Bowman, ND
Sponsor: n/a

The above referenced human subjects research project has been certified as exempt (category #2b) in accordance with federal regulations (Code of Federal Regulations, Title 45, Part 46, Protection of Human Subjects). This determination is based on the revised protocol submission (received 12/20/2017) and information sheet updated 12/21/2017.

Please also note the following:
• If you wish to continue the research after the expiration, submit a request for recertification several weeks prior to the expiration.
• The study must be conducted as described in the approved protocol. Changes to this protocol must be approved prior to initiating, unless the changes are necessary to eliminate an immediate hazard to subjects.
• Notify the IRB promptly of any adverse events, complaints, or unanticipated problems involving risks to subjects or others related to this project.
• Report any significant new findings that may affect the risks and benefits to the participants and the IRB.

Research records may be subject to a random or directed audit at any time to verify compliance with IRB standard operating procedures.

Thank you for your cooperation with NDSU IRB procedures. Best wishes for a successful study.
Sincerely,

Kristy Shirley

Kristy Shirley, CIP, Research Compliance Administrator

For more information regarding IRB Office submissions and guidelines, please consult http://www.ndsu.edu/research/integrity_compliance/irb/. This Institution has an approved FederalWide Assurance with the Department of Health and Human Services: FWA00002439.

INSTITUTIONAL REVIEW BOARD
NDSU Dept 4000 | PO Box 6050 | Fargo ND 58108-6050 | 701.231.8995 | Fax 701.231.8098 | ndsu.edu/irb
Shipping address: Research 1, 1735 NDSU Research Park Drive, Fargo ND 58102
NDSU is an EO/AA university.

APPENDIX G. TRAINING AND EXERCISE TEMPLATE

Training/Exercise	Fiscal Year 2018											
	Jan	Feb	Mar	Apr	May	June	July	Aug	Sept	Oct	Nov	Dec
New employee/ locum orientation to facility												
General Safety- PPE, protection from harm at workplace, lifting, OSHA												
Protective Action Recommendations (PAR)												
Hazard Specific Protocols-Tornado, fire,												
Cross Training												
Continue or Stand Up Ops After Emergency/Disaster												
Plan review EOP, your role/function												
Drill-fire												
Tabletop												
Full Scale- in conjunction with community partners limitations and strengths review												
After Action Report (AAR)												
Plan/Policy Updates												

APPENDIX H. EDUCATION PLAN

Emergency/Disaster Education Plan for Healthcare Providers		
Competency	**Performance Objectives**	**Suggested Training/Tools**
Domain #1: Personal Preparedness		
Demonstrate personal and family preparedness for emergencies/disasters	Develop a personal and family preparedness plan.	-Dept of Homeland Plan -FEMA Citizen Preparedness Manual
Domain #2: Recognition & Response		
Synthesize information to recognize & respond effectively to ever changing environment during emergency/disaster events	Explain situational awareness and its application to emergency/disaster response. Identify typical indicators of specific events likely to occur in the community. Describe response activation protocols. Demonstrate how to integrate and react to new information. Describe events in which changing situations/environments results in modification of plans & actions.	-Facility/community hazard vulnerability assessment review -Facility EOP, hazard-specific policy review, after action report -FEMA IS-914, AWR-160-W WMD -Yale New Haven EM 120, EM 108, EM 142, EM 143, EM 220.1 -2018 CDC Don't Overlook Environmental Exposures -CDC/FEMA EHTER Awareness
Domain #3: Terminology & Emergency Operations (ICS/NIMS/NRF)		
Demonstrate ability to work within organizational emergency operations framework/incident command system (ICS)	Define key terms used in emergencies/ disasters. Explain purpose & functions of ICS/NIMS/NRF. List functional responsibilities for each role within ICS. Summarize personal roles and responsibilities within ICS.	-Facility EOP, specific hazards policy review -FEMA IS-100.HCB -Yale New Haven: EM 108, EM 141, EM 106, EM 142, EM 143 -CDC Emergency Preparedness for Clinicians -FEMA EM Terms & Definitions

Domain #4: Communication		
Communicate/collaborate effectively within organization, with outside response personnel, and the public in an emergency/disaster.	Explain how communication flows within ICS structure. Identify facility resources for alternate methods of communication. Generate strategies for personal use of crisis and emergency risk communication principles.	-Facility EOP review -AAP The Ins and Outs of Communicating in a Disaster -CDC CERC -Tulane Risk Communication: Best Practices, Communication Gap
Domain #5: Health & Safety		
Prevent and mitigate risks to self and others.	List factors necessary to provide a safe, clean, & structurally sound area for medical care. Demonstrate appropriate PPE use & decontamination policies and equipment within facility. Identify components of and precautions for scene safety for patients, bystanders, and responders.	-Facility EOP, PPE, decontamination policy review -Tulane Disaster Responder Health & Safety -Yale New Haven: EM 220.2, EM120, EM 121, EM 220.3, EM 220.R -Prepare Iowa PPE -CDC/FEMA EHTER Awareness
Domain #6: Patient Logistics Management		
Demonstrate ability to recognize and respond to medical surge, indications to shelter in place, and events requiring evacuation.	Identify situations that require evacuation & sheltering in place. Describe evacuation procedures. Identify 3 components of surge capacity (3-Ss: staff, stuff, structure) Explain patient tracking and transfer of medical information during/after evacuation.	Facility EOP, evacuation policy review -Yale New Haven: EM 150, EM 151 -Dept of Health & Humans Services Medical Surge Capacity & Capability -Participation in facility/community full scale exercises

Domain #7: Special Needs Populations		
Manage patients with special needs according to their age, medical, cultural & logistic needs.	Describe cultural considerations in emergencies/disasters. Identify age, medical, & cultural differences that may require modifying treatment plans.	-HHS Minority Health CLAS -Yale New Haven: EM 260, EM 250, EM 251 -Tulane Special Needs Populations in Disaster -NTPI Emergency Response…Access & Functional Needs -FEMA Disability & Disaster
Domain #8: Mental Health Considerations		
Respond appropriately to stress-induced behaviors and other behaviors in patients, responders, & others in emergencies/disasters	Identify common stress reactions during emergency/disaster. Explain psychological first aid interventions. List resources for behavioral health after an event.	-CDC (2017) Provider Role in Supporting Children, Families and Professional Self-Care -John Hopkins Psychological First Aid -Tulane Mental Health Aspects for Non-Mental Health Professionals -SAMHA Disaster Kit
Domain #9: Legal/Ethical Principles & Challenges		
Apply legal & ethical principles to emergency/disaster situations. Evidence preservation	Describe how ethical principles guide emergency/disaster response. Describe crisis standards of care its ethical considerations. Explain legal protections for responders. Demonstrate evidence preservation if applicable.	-NACCHO Good Decision Making in Real Time -IOM's Crisis Standards of Care -CDC (2017) Selected Federal Legal Authorities - Ethical Guidance for Disaster Response, Specifically Around Crisis Standards of Care: A Systematic Review

Domain #10: Resource & Response Resources		
Manage & utilize supplies/equipment and local/regional/state/federal aid resources appropriately	Describe importance of mutual aid & memorandums of understanding. Identify situations that elicit regional/ state/federal aid deployment. Explain functions and limitations of local/ regional/state/federal aid resources. Formulate a management plan if additional aide/resources are unavailable.	-Facility EOP, MOAs -ND Dept of Health Emergency & Response website (PHEVR-MRC, ND EPR, ND HAN) -FEMA IS-820
Hazard Specific Emergency/Disaster Education Plan for Healthcare Providers		
Competency	**Performance Objectives**	**Suggested Training/Tools**
Domain #11: Hazard-Specific Medical Management & Triage		
Assess, diagnose, and treat patients affected by bioterrorism agents (bacterial, viral, biologic toxins)	-Recognize common patient presentations that occur during a biological event. -Identify equipment, supplies and medications needed to provide care and explain how to adapt care when resources are limited.	-Facility EOP, hazard-specific policy review -Prepare Iowa Emergency Response to Domestic Biological Incidents -Tulane Bioterrorism -USAMRRID Medical Management of Biological Casualties Handbook -FEMA AWR 111, AWR-160-W WMD
Assess, diagnose, and treat patients affected by pandemics/infectious diseases.	-Recognize common patient presentations that occur during a pandemic event. -Identify equipment, supplies and medications needed to provide care and explain how to adapt care when resources are limited.	-Facility EOP, hazard-specific policy review -Yale New Haven: EM 180, EM 280 -FEMA AWR 111, AWR-160-W WMD

Assess, diagnose, and treat patients affected by chemical agents	-Recognize common patient presentations that occur during a chemical event. -Identify equipment, supplies and medications needed to provide care and explain how to adapt care when resources are limited.	-Facility EOP, hazard-specific policy review -ATSDR Medical Management for Acute Chemical Exposures -NIH WISER -FEMA IS 346 -US Dept of HHS CHEMM -FEMA AWR 111, AWR-160-W WMD
Assess, diagnose, and treat patients affected by radiological/nuclear agents	-Recognize common patient presentations that occur during a radiological event. -Identify equipment, supplies and medications needed to provide care and explain how to adapt care when resources are limited.	-Facility EOP, hazard-specific policy review -US Dept of HHS REMM -CDC Medical Countermeasures for Radiation Exposure -FEMA AWR 111 AWR-160-W WMD
Assess, diagnose, and treat patients affected by explosions/bombings	-Recognize common patient presentations that occur during an explosion/ bombing event. -Identify equipment, supplies and medications needed to provide care and explain how to adapt care when resources are limited.	-Facility EOP, hazard-specific policy review -CDC Bombings: Injury Patterns and Care -FEMA AWR 111, AWR-160-W WMD
Assess, diagnose, and treat patients affected by mass shootings	-Recognize common patient presentations that occur during a mass shooting event. -Identify equipment, supplies and medications needed to provide care and explain how to adapt care when resources are limited.	-Facility EOP, hazard-specific policy review -NAM Health/Medical Response to Active Shooter & Bombing -MESH Responding to Active Shooter in Healthcare Setting

Assess, diagnose, and treat patients affected by natural/weather events	-Recognize common patient presentations that occur during a natural/weather event. -Identify equipment, supplies and medications needed to provide care and explain how to adapt care when resources are limited.	-Facility EOP, hazard-specific policy review -FEMA IS 319, IS 329 -CDC Prevention/Treatment -See also triage, facility infrastructure failure, mass casualty/wound/ hemorrhage/crush injuries
Prioritize patients to maximize survivability in triage situations.	Compare/contrast convention & disaster triage. Demonstrate use of mass-casualty triage protocol.	-Facility EOP, hazard-specific policy review
Recognize and respond effectively to facility infrastructure failures	Identify situations that require evacuation. -List local/regional/state response capabilities.	-Facility EOP, hazard-specific policy review -Facility MOA

APPENDIX I. EDUCATION RESOURCES

ONLINE EDUCATION RESOURCES (FREE/MINIMAL CHARGE) (Please see instructions below for access to some password-protected content)		
Personal/ Family Preparedness	Department of Homeland Security-Make a Plan https://www.ready.gov/make-a-plan FEMA Citizen Preparedness Manual https://www.fema.gov/pdf/areyouready/areyouready_full.pdf **PREP 1110** Personal Emergency Preparedness: Planning for the Public Health Worker http://ncdp.crlctraining.org/catalog/course.asp?id=43&cid=3 **IS 909** Community Preparedness: Implementing Simple Activities for Everyone https://training.fema.gov/is/courseoverview.aspx?code=IS-909& Your Family Disaster Plan (Train.org)	DHS/FEMA/ CDC/Train.org
Awareness/ Critical Thinking	**IS-914**: Surveillance Awareness: What You Can Do https://training.fema.gov/is/courseoverview.aspx?code=IS-914 -interactive web based course (0.1CEU)	FEMA
	Improving Public Health Preparedness: Strengthening Biosurveillance Systems for Enhanced Situational Awareness https://nciph.sph.unc.edu/docs/BiosurvReport_092013.pdf?_ga=2.39366123.934831062.1519325495645893508.1519325495 -reading content	CDC (2013)
	Critical Thinking for Public Health Practice https://prepareiowa.training-source.org/training/courses/Critical%20Thinking/detail -online course	Prepare Iowa
	Environmental Health Training in Emergency Response (EHTER) Awareness https://www.cdc.gov/nceh/ehs/elearn/ehter.htm -interactive web based course 0.8CEU	CDC/FEMA (2012)
	Don't Overlook Assessing Environmental Exposures-During Disaster and Every Day https://emergency.cdc.gov/coca/calls/2018/callinfo_021318.asp - slides, audio, webinar, transcript (1CME)	CDC (2018)
	Decision Making in Disasters: Lessons from the Field Crisis Management: Critical Thinking in Crisis Preparation http://lms.southcentralpartnership.org/course/index.php -videos, quizzes	Tulane

General Preparedness	Emergency Preparedness for Clinicians - From Guidelines to the Front Line https://emergency.cdc.gov/coca/calls/2015/callinfo_032615.asp -slides, audio, webinar, transcript (1CME)	CDC (2015)
	IS-100.HCB Introduction to the Incident Command System (ICS) for healthcare/hospitals https://training.fema.gov/is/courseoverview.aspx?code=IS-100.HCb -interactive web based course (0.3CEU)	FEMA
	IS-700 National Incident Management System (NIMS) an introduction https://training.fema.gov/is/courseoverview.aspx?code=IS-700.a -interactive web based course (0.3CEU) **OR** **EM 108** Emergency Preparedness for Healthcare with NIMS http://ynhhs.emergencyeducation.org/ -online (CEU $15)	FEMA Yale New Haven (CEDPE)
	IS-200.HCA Applying ICS to Healthcare Organizations https://training.fema.gov/is/courseoverview.aspx?code=is-200.hca -interactive web-based course (0.3CEU) **OR** **EM 142** Incident Command Systems for Healthcare with NIMS **AND** **EM 143** Incident Command Systems for Healthcare with NIMS/NRF http://ynhhs.emergencyeducation.org/ -online (CEU $15)	FEMA/ Yale New Haven (CEDPE)
	EM 141 The Role of Medical/Technical Specialists During an Incident: Mini Module **EM 106** Emergency Preparedness for Healthcare at Work and At Home http://ynhhs.emergencyeducation.org/ -online, interactive case study	Yale New Haven (CEDPE)
	North Dakota Department of Health Emergency Preparedness and Response -Health Alert Network-medical cache https://www.health.nd.gov/EPR/	ND Dept. of Health
	Emergency Preparedness Training for Hospital Clinicians -general overview of biologic/chemical/explosive/radiologic/peds (train.org)	CPHP via train.org
	Online Core Disaster Life Support https://www.ndlsf.org/ -online course	NDLSF
Communication	Emergency Risk Communication http://www.nwcphp.org/training/opportunities/online-courses/emergency-risk-communication-for-public-health-professionals -video/audio with quizzes (2.5CEU); how to speak with media	NWCPHP
	Say What? The Ins and Outs of Communicating in a Disaster https://www.aap.org/en-us/advocacy-and-policy/aap-health-initiatives/Children-and-Disasters/Pages/Disaster-Preparedness-and-Response-Webinar-Archives.aspx -webinar	AAP

	Crisis and Emergency Risk Communication (CERC) https://emergency.cdc.gov/cerc/training/index.asp -interactive module, 0.2CEU	CDC
	The Role of Health Literacy in Disaster Preparedness Risk Communication: Best Practices for Communicating Effectively in High Stress Situations Communication Gap: Linking First Responders and First Receivers http://lms.southcentralpartnership.org/course/index.php -videos, quizzes	Tulane
	IS 242B Effective Communication https://training.fema.gov/emiweb/is/is242b/student%20manual/sm_complete.pdf -reading content	FEMA
PPE/ Responder Safety	Disaster Responder Health and Safety http://lms.southcentralpartnership.org/course/index.php -videos, quizzes	Tulane
	EM 120 Best Practices for the Protection of Healthcare Facility-Based First Receivers, Awareness Level **EM 121** N95 Respirator and Personal Protective Equipment (PPE) Training for Health Care Workers OHSA **EM 220.1** Best Practices for the Protection of Health Care Facility-Based First Receivers (Operations Level): Hazard Awareness and Risks OSHA **EM 220.2** Best Practices for the Protection of Health Care Facility-Based First Receivers (Operations Level): Personal Protective Equipment (PPE) OSHA **EM 220.3** Best Practices for the Protection of Health Care Facility-Based First Receivers (Operations Level): The Decontamination Process OSHA **EM 220.R** Best Practices for the Protection of Health Care Facility-Based First Receivers (Operations Level): Review OSHA http://ynhhs.emergencyeducation.org/ -online, CEU=$15	Yale New Haven (CEDPE)
	Personal Protective Equipment (PPE) https://prepareiowa.training-source.org/training/courses -online course	Prepare Iowa
Evacuation/ Shelter In Place/ Medical Surge	**EM 150** Introduction to Evacuations **EM 151** Patient Movement During Evacuations http://ynhhs.emergencyeducation.org/ -online, interactive case study	Yale New Haven (CEDPE)
	Medical Surge Capacity and Capability https://www.phe.gov/Preparedness/planning/mscc/handbook/Documents/mscc080626.pdf -reading content	Dept of HHS

	Community Planning Framework for Healthcare Preparedness Chapters 4-7 Planning for Surge https://www.cdc.gov/phpr/readiness/healthcare/documents/CPF-Package.pdf -reading content	CDC
	Evacuation and Shelter-In-Place Guidelines for Healthcare Entities https://www.calhospitalprepare.org/post/evacuation-and-shelter-place-guidelines-healthcare-entities -reading content	California Hospital Association
	Addressing Surge in Rural and Frontier Communities -webinar	NACCHO via Train
	MGT 339-W Resource Inventory Management for Rural Communities https://www.ruraltraining.org/training/courses/mgt-339-w/ -web based course	FEMA via RDPC
Culturally Competent/ Special Populations	Culturally and Linguistically Appropriate Services (CLAS) - This set of courses is designed to help you deliver culturally and linguistically competent services in disaster situations. https://cccdpcr.thinkculturalhealth.hhs.gov/ -video/audio, no CEU for MD/NP/PA	HHS Office of Minority Health
	Disability and Disaster -video	FEMA via Train.org
	Emergency Response for People Who Have Access and Functional Needs http://terrorism.spcollege.edu/SPAWARAFN/Guide/GuideforFirstResponders.pdf -reading content	NTPI
	Clinical Challenges in the Community Management of Patients with Special Needs in Disaster Special Needs Populations in Disaster Response Cultural Competence in Emergencies http://lms.southcentralpartnership.org/course/index.php -videos, quizzes	Tulane
	EM 260 Geriatric Preparedness, Triage and Treatment in Disasters **EM 250** Small Victims, Big Challenges: Pediatric Triage, Treatment & Recovery for Emergencies **EM 251** Responding to the Medical and Functional Needs of Pediatric Populations During Disasters http://r6phtc.sph.tulane.edu/online-courses/ -quizzes, videos	Yale New Haven (CEDPE)
	Pediatrics JumpStart triage, Decontamination, and other topics http://www.jumpstarttriage.com/Other_Lectures.php -powerpoints	Dr. Romig (pediatrician)

	Preparing for Explosion and Blast Injuries/Bioterrorism/Chemical/Radiation in Pediatrics https://www.tnemsc.org/Online%20Courses -video	TNEMSC
	Helping Practices Prepare for Disasters: Pediatrics https://www.youtube.com/watch?v=w8prNqH2W4I&feature=youtu.be -video	AAP
	Pediatric Issues in Disasters and Emergencies Pediatric Trauma and Disaster http://lms.southcentralpartnership.org/course/index.php -quizzes, videos	Tulane University
Mental/ Behavioral Health	Primary Care Providers' Role in Supporting Children, Families, and Professional Self-Care Following Hurricanes and Other Disasters https://emergency.cdc.gov/coca/calls/2017/callinfo_102617.asp -1CME	CDC (2017)
	Weathering the Storm Understanding the Mental Health Impact of Hurricane Sandy https://emergency.cdc.gov/coca/calls/2015/callinfo_091715.asp -slides, audio, webinar, transcript (1CME)	CDC (2015)
	Disaster Mental Health: Crisis Counseling Programs for the Rural Community https://archive.samhsa.gov/dtac/FederalResource/Response/7-Crisis_Counseling_Rural_Communites.pdf -Reading content	SAMHSA
	SAMHSA Disaster Kit -accessible through SAMHSA Behavioral Health Disaster Response Mobile App -24/7 Disaster Distress Helpline 1-800-985-5990 or text TalkWithUs to 66746 https://store.samhsa.gov/product/SAMHSA-s-Disaster-Kit/SMA11-DISASTER -Reading content	SAMHSA
	Psychological First Aid -Free without certificate ($49 with certificate of completion); Learn to provide psychological first aid to people in an emergency by employing the RAPID model: Reflective listening, Assessment of needs, Prioritization, Intervention, and Disposition. https://www.coursera.org/learn/psychological-first-aid -video lectures, quizzes	John Hopkins
	Psychological First Aid Field Operations Guide http://www.nctsn.org/sites/default/files/pfa/english/1-psyfirstaid_final_complete_manual.pdf	Society of Clinical Psychology

	Facing Fear: Crisis Communication and Disaster Behavioral Health Mental Health Aspects of Emergencies and Disasters for Non-Mental Health Professionals http://lms.southcentralpartnership.org/course/index.php -videos, quizzes	Tulane
Ethical/Legal	Good Decision Making in Real Time: Practical Public Health Ethics for Local Health Officials -video, 2CEU	NACCHO via train.org
	Institute of Medicine: Crisis Standards of Care https://www.nap.edu/read/13351/chapter/1 -reading content	IOM
	Selected Federal Legal Authorities Pertinent to Public Health Emergencies https://www.cdc.gov/phlp/docs/ph-emergencies.pdf -reading content	CDC (2017)
	Ethical Guidance for Disaster Response, Specifically Around Crisis Standards of Care: A Systematic Review http://www.ncfhcc.org/wp-content/uploads/2017/08/Ethical-Guidance-for-Disaster-Response-Specifically-Around-Crisis-Standards-of-Care-A-Systematic-Review.pdf -reading content	Peer reviewed
	Scarce Resource Allocation during Disasters: A Mixed-Method Community Engagement Study http://www.ncfhcc.org/wp-content/uploads/2017/08/Scarce-Resources-Allocation-during-Disasters-CHEST-Journal-2017.pdf -reading content	Peer reviewed
	The Biological Evidence Preservation Handbook https://www.nist.gov/sites/default/files/documents/forensics/NIST-IR-7928.pdf -reading content	NIST
	Preservation of Evidence (In Disaster Medicine: Comprehensive Principles and Practices by Koenig & Schultz) https://books.google.com/books?id=lmLiCwAAQBAJ&pg=PA236&lpg=PA236&dq=medical+evidence+preservation+techniques+disaster&source=bl&ots=HlYEbqxEN_&sig=SxNQB7GhgPLCSeaNPklaqiL9TCk&hl=en&sa=X&ved=0ahUKEwjWhurz3b3ZAhUKna0KHdEyBk8Q6AEINzAC#v=onepage&q=medical%20evidence%20preservation%20techniques%20disaster&f=false -reading content from book available online	Koenig & Schultz (2016)
	Altered Standards of Care in Disaster http://lms.southcentralpartnership.org/course/index.php -quizzes, videos	Tulane

Volunteer/ Governmental Support	**IS-820** Introduction to NRF Support Annexes https://training.fema.gov/is/courseoverview.aspx?code=IS-820& -interactive web based course (0.1CEU)	FEMA
	North Dakota Public Health Emergency Volunteer/Medical Reserve Corps (PHEVR/MRC) https://www.ndhealth.gov/EPR/HP/PHEVR/ North Dakota Department of Health Emergency Preparedness & Response Hospital Preparedness https://www.health.nd.gov/EPR/hospital-preparedness/ -online information	ND DoH EPR
	MRC Factors for Success: Alerting, Activating, & Demobilizing Volunteers -online module	Train.org
	Lessons From the Storm: Crisis and Collaboration http://lms.southcentralpartnership.org/course/index.php -quizzes, videos	Tulane
Bioterrorism Threats	Emergency Response to Domestic Biological Incidents https://prepareiowa.training-source.org/training/courses -webinar	Prepare Iowa
	Medical Management of Biological Casualties Handbook http://www.usamriid.army.mil/education/bluebookpdf/USAMRIID%20BlueBook%207th%20Edition%20-%20Sep%202011.pdf -recognition of and treatment for biological threats reading content/reference	USAMRRID (2011)
	Medical Aspects of Biological Warfare http://www.cs.amedd.army.mil/borden/Portlet.aspx?ID=66cffe45-c1b8-4453-91e0-9275007fd157 -reading content	AMEDDC&S
	Biological Response Preparedness for Emergency Medical Services Bioterrorism Preparedness: Factors for the Emergence/Reemergence of Infectious Disease/Infectious Disease Epidemiology and Public Health Surveillance Bioterrorism http://lms.southcentralpartnership.org/course/index.php -videos, quizzes	Tulane
	Bioterrorism Agents/Diseases https://emergency.cdc.gov/agent/agentlist.asp -online resource for diagnosis and treatment of specific pathogens	CDC
	EM 201: Bioterrorism Preparedness for Clinicians http://ynhhs.emergencyeducation.org/ -online CEU $15	Yale New Haven (CEDPE)
	Biohazards Natural & Man-Made -video webinar	UNICRI via train.org

Infectious Disease/ Pandemic	Planning and Response to a Pandemic Influenza for Clinicians http://lms.southcentralpartnership.org/course/index.php -videos, quizzes	Tulane
	EM 180 Planning and Response to a Pandemic Influenza for Health Care Workers **EM 280** Planning and Response to a Pandemic Influenza for Clinicians http://ynhhs.emergencyeducation.org/ -online CEU $15	Yale New Haven (CEDPE)
	Pandemic: A Critical Thinking Scenario https://prepareiowa.training-source.org/training/courses -webinar	Prepare Iowa
Chemical/ HAZMAT	HAZMAT for Healthcare Providers: Operations Level-2018 https://prepareiowa.training-source.org/training/courses -toxicology, reference materials, PPE, decon webinar	Prepare Iowa
	Medical Management Guidelines for Acute Chemical Exposures https://www.atsdr.cdc.gov/MMG/index.asp -reference for each specific chemical	ATSDR
	Wireless Information System for Emergency Responders (WISER) https://wiser.nlm.nih.gov/choose_platform.html -lists chemicals and immediate treatment; has app for phones	NIH
	IS-346 An Orientation to Hazardous Materials for Medical Personnel https://training.fema.gov/is/courseoverview.aspx?code=is-346 -reading, 1 CEU	FEMA
	Chemical Terrorism Practice-based Scenarios for Recognition, Detection, and Exposure Assessment of Chemical Terrorist Agents Recognition and Safe Handling of Chemical Terrorist Agents http://lms.southcentralpartnership.org/course/index.php -videos, quizzes	Tulane
	Chemical Hazards Emergency Medical Management (CHEMM) https://chemm.nlm.nih.gov/index.html -online resource for diagnosis/treatment	US Dept of HHS
	Chemical Weapons -video webinar	UNICRI via train.org
Radiation/ Nuclear	THE Medical Aspects Of Radiation Incidents https://orise.orau.gov/reacts/documents/medical-aspects-of-radiation-incidents.pdf -reading content	REAC/TC (2017)
	Radiological Events in a Community: Low Dose/High Dose Introduction to Radiologic Emergency Preparedness Advanced Radiological Emergency Preparedness for Clinicians http://lms.southcentralpartnership.org/course/index.php -videos, quizzes	Tulane

	Radiation Emergency Medical Management (REMM) https://www.remm.nlm.gov/index.html -online resource for diagnosis/treatment	US Dept of HHS
	Training: Medical Countermeasures for Radiation Exposure and Contamination https://emergency.cdc.gov/radiation/countermeasuretraining.asp Radiation Basics Made Simple https://emergency.cdc.gov/radiation/radbasics.asp -1.5CME	CDC (2017)
	Medical Management of Radiological Casualties https://www.usuhs.edu/sites/default/files/media/afrri/pdf/4edmmrchandbook.pdf	USU
	EM 110: Introduction to Radiological Emergency Preparedness **EM 210:** Advanced Radiological Emergency Preparedness for Clinicians http://ynhhs.emergencyeducation.org/ -online CEU $15	York New Haven (CEDPE)
Bombing/Blast Injuries	Bombings: Injury Patterns and Care -CDC Blast Injury app, fact sheets, audio podcast, 1 hour webinar/3 hour PPT (2.3 CEU) https://www.acep.org/blastinjury/#sm.0001p31py0xpceuqwyz2q4tp0rncg	CDC
	Tactical Emergency Casualty Care -emergent wound/fracture care http://www.naemt.org/docs/default-source/education-documents/tccc/tccc-updates_092017/tccc-mp-curriculum-1708/00-tccc-mp-guidelines/tccc-guidelines-for-medical-personnel-170131.pdf?sfvrsn=798acd92_2 AND https://www.nfpa.org/~/media/files/news-and-research/resources/external-links/first-responders/urban-fire-forum/uff-tecc.pdf?la=en -Reading content	NAEMT
	Medical aspects of terrorist bombings – a focus on DCS and DCR https://mmrjournal.biomedcentral.com/articles/10.1186/2054-9369-1-13 -Reading content	Peer reviewed
	Explosion and Blast Injury http://lms.southcentralpartnership.org/course/index.php -videos, quizzes	Tulane

CBRNE (chemical, biologic, radiologic, nuclear, explosion)	**AWR 111** Internet-Basic Emergency Medical Services (EMS) Concepts For Chemical, Biological, Radiological, Nuclear, And Explosive (CBRNE) Events https://teex.org/Pages/Class.aspx?course=AWR111&courseTitle=InternetBasic%20Emergency%20Medical%20Services%20(EMS)%20Concepts%20for%20Chemical%2C%20Biological%2C%20Radiological%2C%20Nuclear%2C%20and%20Explosive%20(CBRNE)%20Events	FEMA via Texas A&M
	AWR-160-W WMD Terrorism Awareness For Emergency First Responders https://teex.org/Pages/Class.aspx?course=AWR160&courseTitle=WMD/Terrorism+Awareness+for+Emergency+Responders -online course	FEMA via Texas A&M
	Emergency Medical Services Operations and Planning for Weapons of Mass Destruction https://prepareiowa.training-source.org/training/courses -webinar	Prepare Iowa
Active Shooter	Responding to an Active Shooter in a Healthcare Setting https://vimeo.com/112455575 -video	MESH Coalition
	Health and Medical Response to Active Shooter and Bombing Events https://nam.edu/wp-content/uploads/2016/06/Health-and-Medical-Response-to-Active-Shooter-and-Bombing-Events.pdf -reading content	NAM (2016)
	First Responder Guide to Improving Survivability in IED/Active Shooter https://www.dhs.gov/sites/default/files/publications/First%20Responder%20Guidance%20June%202015%20FINAL%202.pdf -reading content	DHS
Natural/ Weather Events	**IS 319** Tornado Mitigation Basics for Mitigation Staff https://training.fema.gov/is/courseoverview.aspx?code=IS-319 **IS 320** Wildfire Mitigation Basics for Mitigation Staff https://training.fema.gov/is/courseoverview.aspx?code=IS-320 -hurricane, flood, earthquake also available	FEMA
	Prevention and Treatment of Injuries Following Hurricanes & Tornadoes https://stacks.cdc.gov/view/cdc/31922 -webinar	CDC

	Extreme Ambient Temperatures and Cardiorespiratory Emergency Room Visits https://www.ncbi.nlm.nih.gov/pmc/articles/PMC3922624/ Healthcare Professionals: Be Prepared for Heatwaves http://www.thelancet.com/pdfs/journals/lancet/PIIS0140-6736(15)61261-2.pdf Health Impacts of Wildfires http://currents.plos.org/disasters/article/health-impacts-of-wildfires/ Risk of Tornado-Related Death & Injury in Oklahoma May 3, 1999 https://watermark.silverchair.com/kwi142.pdf?token=AQECAHi208BE49Ooan9kkhW_Ercy7Dm3ZL_9Cf3qfKAc485ysgAAAaUwggGhBgkqhkiG9w0BBwagggGSMIIBjgIBADCCAYcGCSqGSIb3DQEHATAeBglghkgBZQMEAS4wEQQMxa7_6FPoDuAGhqGbAgEQgIIBWNMxkp6j3_zBce4H3PP0xeqSHYNy4E3wEn1GY9Aygr3fj2uoLz2exrFF-SDWo-5Wv5RzYEXn3RAn5R8tR1XWn9Sko0geB_6LQ1WT_Z4p2HOuq6kt25imWNNFBiyivsYQUNdxQOMOSwCyVjE-itSrkKz-T-CqY0_LjCEs21KzWspdj6Yno6c82Nrw9vrFNc3vxy9z3TWCw9kresOjxvV7tGYgQ6pto59Jg00rXqEXA9uRioWIF-pDxrWDj5ukbht_-6e2OiAbn-f70WI4qAdqbX6vBHYK1Zbc4J-JH_nXGVXiTazpxhKl_DDhCwadZoKLIguYhsMSvOofPvNWAWXe3EmbvRmDjb6mceRWIzazMZUVC0Zh5gOulXYS8tPSIMlat61BmyHiAnTTB7AtkiMo9uu19TWrePKLWIh1ct5jdUYGjbE1zUy0FXqvcB254aJEj88gNNgyu7bR -reading content	Peer Reviewed
	Hypothermia-Related Events https://www.cdc.gov/mmwr/preview/mmwrhtml/mm6406a2.htm -reading content	CDC
	HHS empower Map 2.0 https://empowermap.hhs.gov/ Map of Medicare beneficiaries reliant upon electricity-dependent DME	Dept of HHS
	Lessons Learned from the Missouri Disasters of 2011 https://www.jointcommission.org/assets/1/6/joplin_2012_lessons_learned.pdf -reading content	MO Hospital Assoc.
	-see also=Triage; Facility Infrastructure Failure; Mass Casualty/Wound/Hemorrhage/Crush Injuries	
Triage	SALT Mass Casualty Triage Online Training -video, quiz (CE=$) Planning for a Mass Casualty Incident; START triage -powerpoint with quizzes	NDLSF Florida DoH via Train.org
	Transportation Triage in Emergencies START Mass Casualty Incident Triage http://r6phtc.sph.tulane.edu/online-courses/ -video, quizzes	Tulane

	Triage During a MCI: A Collaborative Process https://wadem.org/wp-content/uploads/2017/06/Triage-During-an-MCI.pdf -reading content with videos/scenarios	WADEM
	Redefining Outcomes to Resources Ratios for Burn Patient Triage in MCI https://www.ncbi.nlm.nih.gov/pmc/articles/PMC3935344/ -reading content with burn triage tool	Peer Reviewed
	Guidelines for Field Triage of Injured Patients https://www.cdc.gov/mmwr/pdf/rr/rr6101.pdf -reading content	CDC MMWR
	Pediatric Disaster Triage Training Scenarios https://ssom.luc.edu/media/stritchschoolofmedicine/emergencymedicine/emsforchildren/documents/disasterpreparedness/otherresources/mcitriage/emscjumpstarttrainingprogramandmaterials/handoutmaterials/JumpSTART%20Training%20Scenarios%202016%20final%282%29.pdf -scenarios	IDPH
	CDR HEPC Pediatric Triage https://ualbanycphp.org/GRS/eventpast.cfm?id=145 -Webcast, CEU available	U of Albany
	EM 260 Geriatric Preparedness, Triage and Treatment in Disasters **EM 250** Small Victims, Big Challenges: Pediatric Triage, Treatment & Recovery for Emergencies http://r6phtc.sph.tulane.edu/online-courses/ -quizzes, videos	Yale New Haven (CEDPE)
	Pediatrics JumpStart triage, Decontamination, and other topics http://www.jumpstarttriage.com/Other_Lectures.php -powerpoints	Dr. Romig (pediatrician)
Facility Infrastructure Failure	Safe Hospitals in Emergencies & Disasters http://www.wpro.who.int/emergencies_disasters/documents/SafeHospitalsinEmergenciesandDisasterswebоptimized.pdf -reading content	WHO
	Working Without Technology: How Hospitals & Healthcare Organizations Can Manage Communications Failure http://www.phe.gov/Preparedness/planning/cip/Documents/workingwithouttechnology.pdf -reading content	Dept of HHS

Mass Casualty-Wounds/ Hemorrhage/ Crush Injuries	EM 160 Essential Elements of Mass Fatality Planning http://ynhhs.emergencyeducation.org/ -online, CEU=$15	Yale New Haven (CEDPE)
	Tactical Emergency Casualty Care (TECC) Guidelines for BLS/ALS Medical Providers http://www.ctecc.org/images/FINAL_TECC_ALS_BLS_Guidelines_052117_.pdf -reading content	TECC
	An Evidenced-Based Prehospital Guideline for External Hemorrhage Control: American College of Surgeons Committee on Trauma https://www.facs.org/~/media/files/quality%20programs/trauma/education/acscot%20evidencebased%20prehospital%20guidelines%20for%20external%20hemmorrhage%20control.ashx -reading content	Peer Reviewed
	Management of Crush Victims in Mass Disasters: Highlights from Recently Published Recommendations http://cjasn.asnjournals.org/content/8/2/328.full.pdf+html -reading content	Peer reviewed
	Burn Evaluation and Care for Emergency Responders http://r6phtc.sph.tulane.edu/online-courses/ -videos, quizzes	Tulane

CME/INSTRUCTOR -LED EDUCATION		
American College of Surgeons -Distant, various sites -Manuals/CME $$	**Disaster Management and Emergency Preparedness, Rural Trauma Team Development Course, & Advanced Trauma Live Support** -MyATLS app available free of charge -planning methods, preparedness, & medical management of trauma patients -can purchase manuals/online CME	https://www.facs.org/quality-programs/trauma/education
FEMA Center for Domestic Preparedness -Distant in Anniston, AL (Free)	**FEMA Anniston, Alabama On-site Courses** -Completely funded by FEMA, including transportation, lodging, meals	https://cdp.dhs.gov/ https://cdp.dhs.gov/pdf/cdp-student-handbook.pdf
National Disaster Life Support Foundation -Distant, various sites $$	**Basic Disaster Life Support, Advanced Disaster Life Support, & Core Disaster Life Support**	http://www.ndlsf.org/index.php

University of Florida Health -Jacksonville, FL $$	**Advanced HAZMAT Life Support**	https://ufhealthjax.org/education/disaster-preparedness/#AHLS
Rural Emergency Medical Education -MN, MT, WI locations $$	**Comprehensive Advance Life Support-Rural Specific** **Trauma Module (add-on)** **Benchmark Skills Lab** **OB/Newborn Module**	https://calsprogram.org/
Center for Medical Education -self-study course or live $$	**Original Emergency Medicine Boot Camp** **Advanced Emergency Medicine Boot Camp**	https://courses.ccme.org/course/embootcamp
American Academy of Family Physicians -self-study or live courses $$	**Emergency & Urgent Care**	https://www.aafp.org/cme/browse/all-topics.html
Hospital Procedures Consultants -online $$	**Hospitalist and Emergency Procedures Online**	http://www.hospitalprocedures.org/store/hospitalist-and-emergency-procedures-online-cme-course
Center for Emergency Education -self-study or live courses$$	**Airway Course in a Box** **Practical Airway Management**	https://www.ceme.org/content/airway-course-box-0
American College of Emergency Physicians -online CME $$	**Procedures and Skills CME Collection** **Virtual ACEP Procedures & Skills**	http://ecme.acep.org/diweb/catalog/t/3365/c/84

ONLINE RESOURCES ACCESS INFORMATION	
U.S. Department of Health & Human Services Office of the Assistant Secretary for Preparedness and Response Healthcare Emergency Preparedness Information Gateway (ASPR TRACIE)	https://asprtracie.hhs.gov/technical-resources/27/specific-hazards-patient-care-topics
Public Health Foundation Train.org (Create an account and add groups to profile: CDC clinicians, MRC Region 8)	https://www.train.org/main/home
Federal Emergency Management Agency: Emergency Management Institute	https://training.fema.gov/is/docs/is%20brochure.pdf?ver=20180216
Centers for Disease Control: Emergency Preparedness & Response	https://emergency.cdc.gov/index.asp
Department of Homeland Security: Disasters	https://www.dhs.gov/topic/disasters
Iowa Department of Public Health: Prepare Iowa (Create free account)	https://prepareiowa.training-source.org/training/courses
Tulane University School of Public Health & Tropical Medicine Public Health Learning Network (Course titles listed must be placed in search box to access after creating a free account)	http://r6phtc.sph.tulane.edu/online-courses/
Texas A&M Engineering Extension Service (Create free account or access via Train.org)	https://teex.org/Pages/Program.aspx?catID=425&courseTitle=Emergency%20Management%20and%20Crisis%20Preparedness
Premier Safety Institute	http://www.premiersafetyinstitute.org/
North Dakota Department of Emergency Services	https://www.nd.gov/des/training/
North Dakota Department of Health Emergency Response and Preparedness	https://www.health.nd.gov/EPR/

ND Public Health Emergency Volunteer Reserve/Medical Reserve Corps Training -Can also register online to volunteer. Will receive notifications if medical aid is needed in ND. Response is voluntary.	http://www.ndhealth.gov/ET/WebcastCalendar/ http://www.ndhealth.gov/epr/hp/phevr/faq.aspx
National Center for Disaster Preparedness Columbia Regional Learning Center (Create free account)	http://ncdp.crlctraining.org/

APPENDIX I. EXECUTIVE SUMMARY

Rural Healthcare Providers Emergency Preparedness

ARE YOU READY?

PROJECT RESULTS

- HEALTHCARE PROVIDERS FEEL MODERATELY PREPARED TO CARE FOR VICTIMS
- A DESIRE FOR INCREASED ACCESS TO EMERGENCY/DISASTER PREPAREDNESS EDUCATION EXISTS
- AN EDUCATIONAL PLAN, LIST OF RESOURCES AND FRAMEWORK FOR FURTHER ASSESSMENT WAS DEVELOPED

EXECUTIVE SUMMARY

INTRODUCTION

Emergency/disaster preparedness is an essential area of clinical competence to reduce morbidity and mortality in response to catastrophic events. Well-prepared healthcare providers (physicians, nurse practitioners, & physician assistants) are a vital resource for emergency/disaster response; however, a consensus of research indicates an overall inadequate level of preparedness.A majority of emergency/disaster preparedness efforts have been primarily aimed at urban areas and little has been done to address the needs of rural communities and the unique challenges they face in emergency/disaster preparedness. Providers are leaders and can respond under pressure to reduce morbidity/mortality and economic loss.

PROJECT DESCRIPTION

The purpose of the practice improvement project was to focus on the level of emergency/disaster preparedness of rural healthcare providers in southwest North Dakota and provide an individualized education plan to further prepare providers to fulfill their role in caring for victims. A needs assessment was utitilized to identify gaps in healthcare provider knowledge, and an educational plan was developed with recommended learning resources.

RECOMMENDATIONS

Vulnerabilities exist everywhere, and preparation is key. The Centers for Medicare & Medicaid Services (CMS) new emergency preparedness rules for Participating Providers and Suppliers has brought a renewed focus upon healthcare emergency/disaster preparedness highlighting the value of quality emergency/disaster education and training. No single emergency/disaster competency set for healthcare providers has been universally accepted, and high-quality evidence of the efficacy of training programs is lacking; however, healthcare providers need guidance and resources now. Recommendations include:

- Increase healthcare provider self-awareness of emergency/disaster response abilities and knowledge gaps to drive education/training plan through a needs assessment. A comprehensive education plan allowing provider to place emphasis on their individual knowledge gaps while also providing resources to review and refresh previously learned skills is crucial.
- Incorporate healthcare providers in preparedness planning activities. As leaders and clinical experts, rural healthcare providers provide invaluable insight into disaster response challenges and community strengths.
- Eliminate the barriers to education & training with an organizational culture of quality and safety. Provide opportunities for healthcare providers to participate in online and distance learning to bolster their disaster response knowledge base and skills.
- Use the project's frame work as a guide for on-going assessments of a healthcare provider's knowledge and modification of education plan in the future as needed.
- Expansion of the project to include all healthcare facilities within a specified rural region to ensure all facilities share a commonality in knowledge base resulting in a more effective response with shared financial burden and resources to provide meaningful, effective and efficient healthcare provider emergency/disaster education.

HEALTHCARE PROVIDER EMERGENCY/ DISASTER PREPAREDNESS

- IDENTIFY KNOWLEDGE GAPS
- UTILIZE HEALTHCARE PROVIDERS IN PREPAREDNESS PLANNING ACTIVITIES
- ELIMINATE BARRIERS TO EDUCATION & TRAINING
- ON-GOING REASSESSMENT OF KNOWLEDGE AND ABILITIES
- REGIONAL COLLABORATION FOR COMMONALITY IN KNOWLEDGE BASE

NEW CMS RULES FOR PREPAREDNESS

- EMERGENCY OPERATIONS PLAN (EOP) UPDATED ANNUALLY
- COMMUNICATIONS PLAN
- POLICIES & PROCEDURES DEVELOPED UPON EOP
- TRAINING & EDUCATION PROGRAMS
- BACK-UP ELETRICAL SYSTEMS