INCREASING NEW ORIENTING EMERGENCY DEPARTMENT NURSES' AWARENESS OF MASS CASUALTY INCIDENT EMERGENCY PREPAREDNESS AND DISASTER RESPONSE CORE COMPETENCIES TO IMPROVE MASS CASULATY INCIDENT RESPONSE

A Scholarly Project

Submitted to the

Faculty of Liberty University

In partial fulfillment of

The requirements for the degree

Of Doctor of Nursing Practice

By

Christopher Carmen Deramo II, BSN, RN

Liberty University

Lynchburg, VA

August, 2020

INCREASING NEW ORIENTING EMERGENCY DEPARTMENT NURSES' AWARENESS OF MASS CASUALTY INCIDENT EMERGENCY PREPAREDNESS AND DISASTER RESPONSE CORE COMPETENCIES TO IMPROVE MASS CASULATY INCIDENT RESPONSE

A Scholarly Project

Submitted to the

Faculty of Liberty University

In partial fulfillment of

The requirements for the degree

Of Doctor of Nursing Practice

By

Christopher Carmen Deramo II, BSN, RN

Liberty University

Lynchburg, VA

August, 2020

Scholarly Project Chair Approval:

Dr. Dana Woody, DNP, RN August 4th, 2020

Abstract

Mass casualty incidents (MCI) impose a substantial threat to healthcare. Despite the increasing frequency of MCIs many healthcare organizations and nursing programs do not adequately prepare nurses to be effective responders during an MCI. This evidence-based practice pilot project was purposed to increase new orienting emergency department nurses' confidence and ability to effectively respond to an MCI. This project involved implementing an MCI educational program consisting of a disaster nursing framework to educate new orienting emergency department nurses on emergency preparedness and disaster response core competencies. The project leader utilized a quasi-experimental design to collect data pre- and post-intervention utilizing a modified Emergency Preparedness Information Questionnaire (EPIQ). The measurable outcomes for the project included improvement in awareness of competencies relate to MCI emergency preparedness, awareness of competencies related to disaster response, and level of self-reported confidence to respond to MCIs. This project revealed a statistically significant improvement in the awareness of emergency preparedness and disaster response core competencies among new orienting emergency department nurses as well as enhanced self-reported confidence to respond to an MCI. The results of this project have important implications for enhancing MCI education for nurses to develop prepared and effective responses to MCIs.

Keywords: Mass casualty incident, emergency department, nurses, emergency preparedness, disaster response, core competencies, emergency preparedness information questionnaire, disaster

INCREASING NEW ORIENTING EMERGENCY DEPARTMENT NURSES' AWARENESS OF MASS CASUALTY INCIDENT EMERGENCY PREPAREDNESS AND DISASTER RESPONSE CORE COMPETENCIES TO IMPROVE MASS CASULATY INCIDENT RESPONSE

© 2020

Christopher Deramo II

All Rights Reserved

Acknowledgments

I would first and foremost like to acknowledge God for all the blessings He has graciously bestowed upon me and my family. My accomplishments are not of my own ability but were made possible because of His great love. I give God all the glory. I would like to thank my wife, Kristen Deramo, for her love, support, and encouragement throughout my journey of becoming a doctorally-prepared family nurse practitioner. I am deeply thankful for her sacrifices to allow this dream to become a reality. I am thankful for the grace, mentorship, and support my faculty chair, Dr. Dana Woody, has shared with me through the process of completing a scholarly project. I am greatly appreciative to the emergency department, department director, and nurse educators for supporting and welcoming this project. Thank you to all my family and friends for encouraging and supporting me through these years. It is my desire that God will use me to share his love with others through the profession of nursing.

Table of Contents

Abstract 3

Acknowledgments 5

List of Tables 9

List of Figures 10

SECTION ONE: INTRODUCTION 12

Background 13

Problem Statement 23

Purpose of the Project 23

Significance of the Project 24

Clinical Question 24

- Population 25
- Intervention. 25
- Comparison 25
- Outcomes 25

SECTION TWO: LITERATURE REVIEW 26

Search Strategy 26

Quality of Research 27

Synthesis 28

Conceptual Framework 43

SECTION THREE: METHODOLOGY 45

Design 46

Setting 47

Population 48
Ethical Considerations 49
Instruments/Tools 50
Intervention 54
Timeline of the Project 57
Data Collection 58
Team Members 58
Feasibility Analysis 58
Statistical Analysis and Evaluation 60
SECTION FOUR: RESULTS 60
Summary of Findings 68
SECTION FIVE: DISCUSSION 69
Project Limitations 70
Significance and Implication for Practice 71
Sustainability 72
Dissemination 73
Conclusion 73
References 74
Appendix A 81
Appendix B 99
Appendix C 100
Appendix D 101
Appendix E 102

Appendix F 103

Appendix G 104

Appendix H 105

Appendix I 107

Appendix J 109

Appendix K 110

Appendix L 111

Appendix M 112

List of Tables

Table 1. Mean Improvement Scores in Awareness of Emergency Preparedness and Disaster Response Core Competencies EPIQ- Paired Differences ……60

Table 2. Level of Confidence to Effectively Respond in an MCI Event Paired Samples T-test……..62

Table 3. This Educational Course Improved My Knowledge Regarding Emergency Preparedness and Disaster Response……...63

List of Figures

Figure 1. T-Test Paired Mean Differences of Competencies……62

Figure 2. Paired Mean Differences of Level of Confidence……..63

List of Abbreviations

Case-based learning (CBL)

Chemical, Biological, Radiological, Nuclear, or Explosive events (CBRNE)

Center for Medicare and Medicaid Services (CMS)

Doctor of Nursing Practice (DNP)

Evidence-based practice (EBP)

Emergency Nurses Association (ENA)

Emergency Operation Plan (EOP)

Emergency Preparedness Information Questionnaire (EPIQ)

Hospital Incident Command System (HICS)

The International Nursing Coalition for Mass Casualty Education (INCMCE)

Institutional Review Board (IRB)

Joint Commission on Accreditation of Healthcare Organizations (JCAHO)

Liberty University (LU)

Mass Casualty Incident (MCI)

Statistical Package for the Social Sciences (SPSS)

Simple Triage and Rapid Treatment (START)

Tabletop Exercises (TTE)

SECTION ONE: INTRODUCTION

Mass casualty incidents (MCIs) are a significant issue facing society and healthcare globally. MCIs are defined as "events which generate more patients at one time than locally available resources can manage using routine procedures" (World Health Organization, 2007). Literature has revealed that nurses are unprepared to respond to major disasters (Said & Chiang, 2019; Taskiran & Baykal, 2019; Thobaity, Plummer, & Williams 2017). This is concerning as it is the position of the International Counsel of Nurses (ICN) that nurses should have the fundamental disaster competencies and abilities to rapidly and effectively respond to disaster events (Al-Maaitah et al., 2019). However, research has demonstrated that nurses are unaware of the essential core competencies related to emergency preparedness and disaster response, impacting their self-confidence to respond to an MCI event (Baack & Alfred, 2013; Gowing et al., 2017; Labrague et al., 2017; Marin & Witt, 2015; Said & Chiang, 2019; Taskiran & Baykal, 2019).

Terror attacks, transportation accidents, and natural disasters serve to remind the population that MCIs remain an imminent threat to everyday life. The 2017 Las Vegas country music festival mass shooting involved 58 fatalities and 546 injured (Brown & Goodin, 2018). This mass shooting remains a sobering reminder of the rising incidents of MCIs; and serves as an example for the importance of MCI preparedness among nurses (Brown & Goodin, 2018). The sudden and large number of casualties produced by MCIs present a problem to the hospitals that receive those injured. Emergency departments (ED) are a vital component in the mitigating and response efforts following an MCI. ED nurses are among the first line healthcare professionals that respond to an MCI, and they make up a large group of those receiving, assessing, and treating patients (Murphy et al., 2019). Despite the emphasis placed on ED nurses to be efficient

and confident responders to MCIs, current research suggests a lack of awareness and training among nurses related to MCI response (Baack & Alfred, 2013; Gowing et al., 2017; Labrague et al., 2017; Marin & Witt, 2015; Said & Chiang, 2019; Taskiran & Baykal, 2019). This deficiency demands action through educating ED nurses in an effort to increase the awareness of MCI emergency preparedness and disaster response core-competencies to enhance the outcomes of MCI casualties. This evidence-based practice (EBP) project provided new orienting ED nurses with MCI emergency preparedness and disaster response core-competency education in efforts to increase their knowledge regarding MCI response and support a more confident response effort.

Background

Mass Casualty Incidents Defined

The World Health Organization (WHO) defines MCIs as "an event which generates more patients at one time than locally available resources can manage using routine procedures" (World Health Organization, 2007). From this definition MCIs can further be defined as disaster events whether man-made or natural, that cause a sufficient number of casualties, requiring an extraordinary response by a healthcare system (Nesbitt, 2015). The definition of an MCI does depend somewhat on the perspective of the person or organization defining it. The quantity and severity of casualties that exceed emergency response and overwhelm resources may be different depending on the size of the healthcare system, number of responders, and medial resources available (Kuhls et al., 2017)

Mass Casualty Incident Types

Manmade Mass Casualty Incidents

Most common manmade MCI's are related to terrorism (shooting or explosion), hazardous materials (chemical/biological), or transit (motor vehicle accidents, aviation accidents,

train accidents) (Carroll, Johnson, & Sampson, 2017). In the United States, from January 1, 2000 to December 31, 2016, there were a total of 137 MCIs, each resulting in 10 or more fatalities (Carroll, Johnson, & Sampson, 2017). A total of 81 MCIs were caused by manmade incidents. The most prevalent MCIs producing fatalities were related to transportation (37.3%) (Carroll, Johnson, & Sampson, 2017). Mass transit incidents may produce a range of complex injuries and casualty types. A bombing or explosion, however, tends to generate many with minor injuries and a smaller number of casualties with severe injuries consistent with blast and burns (Nesbitt, 2015). The 2013 Boston Marathon bombing demonstrates the common casualty demographics that would follow a crowded event space explosion. The total number of casualties produced by the Boston bombing was 281 people. From the 281 people injured, 127 received care at local trauma centers, three were immediate fatalities, 75 casualties were admitted to the hospital, 54 casualties underwent emergent surgery, and 12 casualties underwent emergent limb amputation (Gates et al., 2014).

Mass casualty incidents related to shooting are among the most common and closely tracked type of MCI (Office for Victims of Crime, 2018). The law defines a mass casualty shooting as greater than or equal to three fatalities (Brown & Goodin, 2018). Mass shootings, often deadly, have increased over the last decade. Data on this definition of mass shooting were collected from August 1982 to February 2018 and revealed a total of 97 mass casualty shootings in the United States during this time (Brown & Goodin, 2018). The total number of fatalities included 816 people, and those injured were 1,275 (Brown & Goodin, 2018). Over the last decade, the number of MCIs related to shootings has more than doubled, with 57 percent of all recorded United States mass shooting occurring within the last ten years (Office for Victims of Crime, 2018). In 2017, there were more recorded mass shootings in the United States than any

prior recorded year. There were eleven mass shootings in 2017, comprising 117 fatalities and 587 casualties (Office for Victims of Crime, 2018). The Las Vegas country music festival mass shooting involved 58 fatalities and 546 injured; and occurred during this deadly year in 2017 (Brown & Goodin, 2018).

Natural Mass Casualty Incidents

Natural MCIs were the second most common fatality-producing events in the United States, between January 1, 2000 to December 31, 2016 (Carroll, Johnson, & Sampson, 2017). Natural MCIs made up 56 of the 137 total MCI incidents within this timeline (Carroll, Johnson, & Sampson, 2017). The most common natural disaster producing MCIs were related to tornados, representing 25 incidents, and hurricanes, representing 13 incidents (Carroll, Johnson, & Sampson, 2017). Tornados are among the most common causes of natural mass casualty incidents (Carroll, Johnson, & Sampson, 2017). The deadliest tornado recorded in the United States, occurred in Joplin, Missouri, in 2011 (Ahmad, 2018). The tornado resulted in 162 fatalities and over 1,000 injured (Ahmad, 2018). The many casualties were determined to be in relation to the large damage area of the tornado and disproportionate damage to the hospital in this area (Ahmad, 2018).

Practice Standards

Government agencies such as the Joint Commission on Accreditation of Healthcare Organizations (JCAHO) and the Center for Medicare and Medicaid Services (CMS) along with a professional healthcare organization, the Emergency Nurses Association (ENA), have invested interest in MCI preparedness (Hsu et al., 2004). JCAHO requires hospitals to develop disaster preparedness plans and to test their disaster plan twice a year (Hsu et al., 2004). The ENA's position statement on emergency preparedness and response describes emergency departments as

the essential link for hospitals in preparedness planning, response, and recovery of disaster events (Nadworny, 2019). The ENA supports a systematic, standardized, all hazard approach to MCI preparedness by healthcare systems (Nadworny, 2019). The ENA considers it essential for ED nurses to participate in disaster training and preparation (Nadworny, 2019). This approach is also endorsed by JACHO and CMS (Nadworny, 2019). There is a strong perceived benefit to utilizing established competency guidelines in the training programs created to prepare nurses for MCIs (Gowing et al., 2017; Taskiran & Bayakal, 2019; Thobaity, Plummer, & Williams, 2017).

Guidelines

Nursing MCI emergency preparedness and disaster response core competencies define the necessary knowledge and skills nurses need for MCI response. Literature recommends educating nurses on emergency preparedness and disaster competencies (Hutton, Veenema, & Gebbie, 2016; Thobaity, Plummer, & Williams, 2017). The International Nursing Coalition for Mass Casualty Education (INCMCE) was the first MCI competency guidelines created in the United States (Hutton et al., 2016). The goal of these guidelines was to increase nurses' awareness of their role in MCI response (Hutton et al., 2016). The evidence-based nursing MCI competencies established by the INCMCE were supported in development and utilization by the American Association of Colleges of Nursing (AACN) (Stanley et al., 2003). Building from the competencies established by the INCMCE, in 2009, The ICN and WHO created a framework for disaster competencies named. "The ICN Framework of Disaster Nursing Competencies" (Hutton et al., 2016). This guideline was created to be applicable to all nursing settings and, to improve nurses' emergency preparedness and disaster response (Hutton et al., 2016). The ICN Framework of Disaster Nursing Competencies has been referred to in literature as the "gold standard" of disaster nursing (Hutton, Veenema, & Gebbie, 2016; Thobaity, Plummer, &

Williams, 2017). Although guidelines have been established to standardize disaster response, literature shows there is still a lack of standardization that exists in nursing disaster core competencies (Hutton et al., 2016). However, the ICN Framework has been the basis for many disaster and mass casualty educational programs, and it is recommended to be utilized in the development of core competency curriculum (Thobaity, Plummer, & Williams, 2017).

Nurses' Role in a Mass Casualty Incident

Nurses represent the largest group of health care professionals and play an essential role in MCI response (Thobaity, Plummer, & Williams, 2017). Nurses are often the first responders in an MCI. As a result of their imminent response, it is critical that they are prepared to respond to MCIs. The ENA is a worldwide emergency nursing organization devoted to the advancement of excellence in emergency nursing practice (Emergency Nurses Association, n.d). It is the position of the ENA that emergency nurses are active participants in emergency preparedness and disaster response education and training (Nadworny, 2019). The ENA describes emergency departments as the essential link for hospitals in preparedness planning, response, and recovery of disaster events (Nadworny, 2019). Nurses must be involved in the planning and provision of MCI training. Nurses have many active roles during MCI response that include:

- **Coordination**. Nurses should be involved in planning and activation of MCI response. Nurses should understand and be familiar with the organizational emergency operation pan (EOP) (Thobaity, Plummer, & Williams, 2017).
- **Information distribution**. Effective communication is an essential competency of MCI response. Understanding among nurses of the hospital incident command system (HICS) will facilitate proper information distribution (Thobaity, Plummer, & Williams, 2017).

- **Provision of clinical care**. Nurses must demonstrate effective triage and prioritize casualties to provide the greatest good for the greatest number of people (Thobaity, Plummer, & Williams, 2017). Nurses should be trained in an all hazards approach to MCI response. MCI response to chemical, biological, radiological, nuclear, or explosive events (CBRNE) requires nurses to have knowledge and skills related to detection, decontamination, isolation, and personal protective equipment (PPE) related to these events (Thobaity, Plummer, & Williams, 2017).
- **Provision of psychological and emotional care**. Psychological and emotional care involves understanding of MCI ethical issues (Thobaity, Plummer, & Williams, 2017). Nurses must demonstrate the knowledge of psychological sequelae following disasters, the assessment and management of psychological issues, and the ability of responders to recognize and address their psychological needs (King, Burkle, Walsh, & North, 2015).
- **Basic first aid**. The provision of assessment and basic first aid skills are necessary for effective MCI response among nurses (Thobaity, Plummer, & Williams, 2017).

The confidence and skills that are demanded of nurses to effectively respond to MCIs require adequate training and education.

Competency Education

Competencies are essential, as they create consistency in care, build confidence, promote shared aims, and enhance practice among nurses (ICN & WHO, 2009). Competencies support continuing education and are the foundation for EBP (ICN & WHO, 2009). The ICN defines competence as “a level of performance demonstrating the effective application of knowledge, skill, and judgment” (ICN & WHO, 2009). Nursing MCI competence is a major determinant of

effective MCI response. Therefore, it is essential that nurses have the fundamental disaster competencies and abilities to rapidly and effectively respond to MCIs (Al-Maaitah et al., 2019)

Mass Casualty Incident Competencies for Nurses

It is widely acknowledged that nurses are lacking in the knowledge of MCI emergency preparedness and disaster response. Nurses report a lack of confidence in effective disaster response related to insufficiencies in preparedness (Labrague et al., 2017). Clinical expertise and disaster knowledge are required of nurses to provide effective care during an MCI. It has been established that the development of core competencies related to emergency preparedness and disaster response are essential for effective disaster preparedness (Hutton, Veenema, & Gebbie, 2016; Murphy et al., 2019; Park & Kim, 2017; Said & Chiang, 2019; Taskiran & Bayakal, 2019; Thobaity, Plummer, & Williams, 2017). Knowledge of disaster core competency domains is fundamental to nursing (Hutton, Veenema, & Gebbie, 2016; Murphy et al., 2019; Park & Kim, 2017; Said & Chiang, 2019; Taskiran & Bayakal, 2019; Thobaity, Plummer, & Williams, 2017). There are, however, no unified standards for MCI emergency preparedness and disaster response core competencies that have been empirically validated across many studies (Thobaity, Plummer, & Williams, 2017). The ICN disaster nursing framework, however, has helped create consistency in MCI competency education and training through the unified and organized structure of the core disaster competencies it presents. The competencies developed by this framework are applicable to all nursing settings including the ED and are recommended to be utilized in the development of disaster nursing curriculum and educational training for disaster preparedness and response (Thobaity, Plummer, & Williams, 2017). All methods of preparedness education and training including lecture, online, self-learning, didactic, or disaster exercises have improved perceived disaster preparedness, knowledge, and attitudes among

nurses (Gowing, et al., 2017). A blended method of education that includes a combination of the training methods described above can offer improved knowledge and performance (Gowing, et al., 2017).

Nursing Education

Undergraduate nursing programs along with healthcare organizations have failed to appropriately prepare nurses in emergency preparedness and disaster response, as there are still gaps that exist in current disaster preparedness and core competencies knowledge among nurses (Currie, Kourouche, Gordon, Jorm, & West, S. 2018; Park & Kim, 2017; Theodoros, Panayota, Petros, & Athena, 2015) Undergraduate nursing programs have recently began educating students in MCI as a part of nursing curriculum (Currie et al., 2018). The recent focus on MCI and disaster response in nursing programs is to ensure nurses have a baseline level of familiarity with emergency preparedness and disaster response competencies at the beginning of their practice (Currie et al., 2018).

Triage

Triage is an essential MCI competency related to emergency preparedness and disaster response. MCI triage is listed as a knowledge competency in disaster guidelines and the emergency preparedness information questionnaire (EPIQ). The Simple Triage and Rapid Treatment (START) triage method has been demonstrated as an accurate and efficient method for MCI triage (Curran-Sills & Franc, 2017). START triage is commonly incorporated into many hospitals' emergency preparedness plans, warranting its inclusion into MCI core competency training of ED nurses (Curran-Sills & Franc, 2017).

Mass Casualty Incident Training Strategies

Formal MCI education supplemented with disaster drills or tabletop exercises should be used to accomplish MCI preparedness (Taskiran & Bayakal, 2019). When comparing video-based learning (VBL) and traditional lecture (TL) in the education of disaster competencies including mass triage, decontamination, and personal protective equipment (PPE), VBL outperformed TL in practical skills. When comparing improvement in knowledge post-intervention, however, both methods showed similar results (Curtis, Trang, Chason, & Biddinger, 2018).

Case-based learning

Case-based learning (CBL) involves the active participation of learners through small group discussion of case scenarios to facilitate multidirectional education (Aluisio, Daniel, Grock, Freedman, Singh, et al., 2016). Collaborative knowledge translation is the strength of this training type (Aluisio et al., 2016). CBL has been shown to significantly improve disaster preparedness and outperform simulated exercises in the educational translation of disaster knowledge (Aluisio et al., 2016).

Tabletop exercise

Tabletop exercises provide the use of knowledge and decision-making in a structured process. Tabletop exercises offer a low-stress approach to learning while also offering high-impact strategy to knowledge translation (Evans, 2019) This method has often been utilized to include disaster scenarios to broaden nursing application of disaster knowledge (Evans, 2019) In this exercise a facilitator will present a scenario, and participants are involved in the objective decision-making and identifying problem (Evans, 2019) A randomized control trial study was conducted to evaluate the use of tabletop exercise as an intervention to improve MCI triage among hospital-based medical and nursing staff (Khan, 2018). Table-top exercise and written

paper instructions were compared as the educational methods of disaster triage (Khan, 2018). When asked to triage 20 disaster case patients after MCI triage training, those that participated in MCI table-top exercise demonstrated higher accuracy and shorter time to triage (Khan, 2018).

Nursing Emergency Preparedness and Disaster Response Evaluation Tool

Healthcare organizations should evaluate their nursing staff's disaster core competencies knowledge and training (Taskiran & Bayakal, 2019). The Emergency Preparedness Information Questionnaire (EPIQ) is an evaluation tool created to comprehensively assess nurses' perceived awareness of emergency preparedness and disaster response competency knowledge (Gowing et al., 2017). EPIQ has been utilized in several studies to evaluate awareness of disaster preparedness and emergency response core competencies among nurses. All studies reviewed utilizing EPIQ determined that nurse's disaster preparedness was low (Gowing et al., 2017). Tools such as EPIQ support MCI training and education through evaluating nurses' awareness of emergency preparedness and disaster response core competencies related to MCI (Gowing et al., 2017). The use of this tool in the proposed EBP scholarly project will improve the reliability and transferability of results following MCI nursing education training.

Opportunities for the Project

Many opportunities exist for this EBP scholarly project. The Doctoral of Nursing Practice (DNP) translates scientific research into actual practice in efforts to support EBP (Chism, 2013). This project provided translation of MCI focused emergency preparedness and disaster response core competency knowledge into nursing practice at a community-based hospital. Literature demonstrates that nurses are unfamiliar with disaster competencies and lack the ability to effectively respond to MCIs (Hutton, Veenema, & Gebbie, 2016; Murphy et al., 2019; Park & Kim, 2017; Said & Chiang, 2019; Taskiran & Bayakal, 2019; Thobaity, Plummer, & Williams,

2017). This project may help positively impact MCI response among new orienting emergency department nurses by utilizing evidence-based educational strategies. Improving the knowledge of ED nurses regarding MCI response will increase quality of care and support optimal outcomes for patients.

Problem Statement

There is a decreased awareness among nurses regarding competencies related to emergency preparedness and disaster response. Many nurses report a lack of confidence in their ability to respond to disaster (Baack & Alfred, 2013; Labrague et al., 2017; Said & Chiang, 2019; Taskiran & Bayakal, 2019). Undergraduate nursing programs along with healthcare organizations do not appropriately prepare future nurse professionals for MCI events. Programs and healthcare systems fail to address MCI emergency preparedness and disaster response core competency education, which leads to an unprepared workforce (Currie, Kourouche, Gordon, Jorm, & West, 2018; Park & Kim, 2017; Theodoros, Panayota, Petros, & Athena, 2015) MCIs have increased in frequency over the last decade and remain an imminent threat to society (Brown & Goodin, 2018). ED nurses are among the first line responders to an MCI and thus MCI emergency preparedness and disaster response core competency knowledge is a priority for these nurses (Murphy et al., 2019). Decreased awareness of MCI emergency preparedness and disaster response core competencies among nurses must be addressed through effective education methods in an effort to significantly improve the outcomes of patients surviving MCIs.

Purpose of the Project

The purpose of this EBP scholarly project was to raise the awareness of new orienting nurses in an emergency department regarding MCI emergency preparedness and response. The project improved new orienting nurses' understanding of MCI emergency preparedness and

disaster response core competencies through the implementation of core competency education focused on MCIs. Likewise, new orienting nurses' self-confidence to respond to an MCI was improved. Evidence-based guidelines were utilized to devise education. Methods of education included lecture, tabletop exercise, and cased-based scenario methods.

Significance of the Project

MCIs significantly impact health care recourses, quickly depleting available resources. This demands action from healthcare organizations to properly prepare nurses for MCI response. Competency-based education and training is essential for nurses to develop the knowledge necessary to ensure effective responses to MCIs (Gowing et al., 2017; Taskiran & Bayakal, 2019; Thobaity, Plummer, & Williams 2017). The following statements of significance was utilized to support this project:

1. Nurses are inadequately prepared for disaster response and report a decreased awareness of emergency preparedness and disaster response competencies.
2. Nursing MCI education and training remains insufficient.
3. MCI education and training utilizing established competencies for MCIs is the standard of practice.
4. Despite the focus on emergency preparedness and disaster response by governing bodies and nursing organizations, the action taken by healthcare organizations to increase MCI knowledge is limited.

Clinical Question

The project addressed the following clinical question: For new orienting nurses in the emergency department, does an educational intervention focused on MCI emergency

preparedness and disaster response core competency-based education improve awareness of MCI response as demonstrated by increased modified EPIQ scores?

- **Population:** The target population for this project was new orienting emergency department nurses at a community-based level II trauma designated hospital.
- **Intervention:** The intervention of this project was competency-based, MCI education that follows evidence-based disaster guidelines. The education was held during a four-hour disaster course training day for new orienting emergency department nurses. The education intervention methods consisted of lecture, tabletop exercise, and case-based scenario methods. A modified EPIQ was administered at the initial training and then again immediately after the implemented intervention.
- **Comparison:** Emergency nurses' awareness of MCI-related emergency preparedness and disaster response core competency knowledge was evaluated by the EPIQ survey pre- and post-intervention. Comparison between pre- and post-intervention modified EPIQ scores were assessed to evaluate for improvement in nurses' understanding of MCI emergency preparedness and disaster response.
- **Outcomes:** The outcomes for the scholarly project include:
    1. To increase the awareness of MCI emergency preparedness core competencies among new orienting ED nurses.
    2. To increase the awareness of MCI disaster response core competencies among new orienting ED nurses.
    3. To increase the level of confidence new orienting ED nurses have in their ability to respond to MCIs.

SECTION TWO: LITERATURE REVIEW

Search Strategy

The Iowa Model of Evidence Based Practice was utilized to support and examine this EBP scholarly project. The project leader conducted a comprehensive review of literature utilizing a computer-assisted search and reference analysis. The literature search identified articles related to the topic of this project. Key search topics in the literature review included: *mass casualty incident, nurse, emergency department, disaster, disaster education, disaster training, mass casualty education, mass casualty training, mass casualty core competencies, disaster competencies, disaster preparedness, emergency preparedness, disaster response, guidelines, mass casualty triage*, and *education.* Databases utilized for the search included: Pub Med, Cochran Database, ScienceDirect, Ovid, EBSCOhost, CINHAL, and Google Scholar. Literature was narrowed through inclusion of articles written in the English language, full text articles, and those written within the last 10 years. However, noting the importance of competency-based disaster guidelines to the project and the extensive references to specific disaster and MCI frameworks found throughout literature, the project leader found it necessary include two guidelines and one pertinent article which was older than 10 years. The initial search utilizing key words yielded 297 articles. Titles and abstracts of the yielded articles were reviewed and narrowed down to 75 articles. Evaluation of the study design, population, intervention, and outcomes of the remaining articles further narrowed the inclusion of literature down to 26 articles. Design types included two peer-reviewed guidelines, three randomized control trial studies, three quasi-experimental studies, nine systematic reviews of descriptive literature, eight descriptive studies, and one expert opinion.

Selection Criteria

- **Population.** The primary population of focus for this scholarly project was new orienting emergency department nurses. Articles that included nurses from other disciplines were included in the review. There was no limitation on the healthcare setting type in the review of literature. Articles were not limited to those within the United States, as literature was included from China, The United Kingdom, Thailand, and Australia.
- **Intervention.** The focus for the intervention was on educational and training interventions for nurses related to MCI response. The project aims to raise the awareness of MCI response among new orienting emergency department nurses through evidence-based core competency education related to emergency preparedness and disaster response. Articles that related to education interventions and strategies for nurses related to the intervention were included.
- **Outcomes.** The desired outcomes for the project included: increased awareness of MCI response among new orienting emergency department nurses, increased awareness among new orienting emergency department of strategies for MCI related emergency preparedness and disaster response and increased level of confidence new orienting ED nurses have in their ability to respond to MCIs.
- **Study Design.** There were no limitations of literature due to study design.

Quality of Research

This project leader was the single reviewer of the research. Quality of research was appraised through use of the Nursing Melnyk Level of Evidence Pyramid (Melnyk & Fineout-Overholt, 2015). The Melnyk Levels of Evidence hierarchy rates articles on level of evidence from highest to lowest. Level I evidence is the highest and Level VII evidence is the lowest (Melnyk & Fineout-Overholt, 2015). The review of literature yielded the following appraisal:

three level II's, three level III's, 11 level V's, eight level VI, and one level VII (See Appendix A for review of literature). Most of the research on mass casualty and disaster nursing core competency education was composed of meta-analysis of descriptive qualitative and quasi-experimental studies. Common limitations in literature included a lack of standardization regarding competencies, convenience sampling, and limited randomization of control groups. Validated guidelines were evaluated for use as the basis of MCI nursing education and training. Literature supports the use of competency-based educational training to educate nurses on emergency preparedness and disaster response related to MCIs (Gowing et al., 2017; Taskiran & Bayakal, 2019; Thobaity, Plummer, & Williams, 2017). Further evidence focused on contributing factors influencing nurses' MCI competency; validating mass casualty and disaster education material; nurses' perceived familiarity and self-reported confidence to respond to MCIs; and effective MCI educational training (Baack & Alfred, 2013; Gowing et al., 2017; Taskiran & Bayakal, 2019; Thobaity, Plummer, & Williams, 2017).

Synthesis

The following discussion addresses findings in literature pertaining to guidelines for MCI response and disaster preparedness, psychological care competencies, the self-perception of disaster preparedness among nurses, factors contributing to competence, essential core competencies, emergency preparedness information questionnaire, and education and training. The relevant findings will be discussed in relation to the clinical question being addressed by the scholarly project.

Guidelines

The International Nursing Coalition for Mass Casualty Education (INCMCE)

The INCMCE, now known as the Nursing Emergency Preparedness Education Coalition (NEPEC), was founded by Vanderbilt University School of Nursing. It was founded in an effort to ensure nurses achieve a minimum level of knowledge and skills in MCI response to be competent responders in disaster situations (Stanley et al., 2003). The NEPEC's systematic development of MCI core competency education was developed to improve emergency response policies, education, research, and regulation (Stanley et al., 2003). A set of national consensus-based, validated MCI core competencies were developed by a committee based on evidence-based literature. The list of core competencies and core knowledge set forth by the NEPEC guidelines are as follows: (1) critical thinking, (2) assessment, (3) technical skills, (4) communication, (5) health promotion, risk reduction, disease prevention, (6) health care systems and policy, (7) illness and disease management, (8) information and health care technologies, (9) ethics, and (10) human diversity.

ICN Framework of Disaster Nursing Competencies

The International Council of Nurses (ICN) and the World Health Organization (WHO) in response to the gaps in nursing disaster education and accepted competencies developed the ICN Framework of Disaster Nursing Competencies guideline (World Health Organization & International Council of Nurses, 2009). This guideline sought to develop standardization to the competencies underpinning disaster nursing curriculum (WHO & ICN, 2009). In the development of disaster competency guideline, a systematic review of literature was conducted pertaining to disaster, nursing, and competence (WHO & ICN, 2009). This review of literature was conducted to assure the complete assessment of information related to the key words presented (WHO & ICN, 2009). Competency documents that contributed greatly to the development of the ICN Framework of Disaster Nursing Competencies include: Core

Competencies for All Public Health Workers, Core Competencies for Nursing and Midwifery in Emergencies, Advanced Practice Registered Nurses (APRN) Emergency Preparedness and All Hazards Response, Emergency and Disaster Preparedness: Core Competencies for Nursing, Mental Health Competencies, and Health Care Worker Competencies for Disaster Training (WHO & ICN, 2009). Key guidelines such as the NEPEC and the Core Competencies Required for Disaster Nursing (COE), were fundamental in developing the framework of the ICN Disaster Core Competencies (WHO & ICN, 2009).

This framework was recently updated and titled, ICN Core Competencies in Disaster Nursing Version 2.0 (Al-Maaitah et al., 2019). Updates to the ICN Disaster Framework were completed in 2019 to encompass the expanded knowledge in emergency response and disaster nursing competencies. A committee of over 150 international nurses along with three major international nursing groups assisted in the final draft and revision of essential emergency preparedness and disaster response competencies. The ten previous domains of disaster nursing competencies were organized into eight core competency domains in an effort to create a more unified and common approach to preparedness among nurses. The eight domains of disaster nursing include: (1) preparation and planning, (2) communication, (3) incident command systems, (4) safety and security, (5) assessment, (6) intervention, (7) recovery, and (8) law and ethics(See Appendix J). (Al-Maaitah et al., 2019). This scholarly project utilized the eight core competency domains established by the ICN as the framework for developing MCI core competency education.

The ICN and World Association for Disaster and Emergency Medicine (WADEM) teamed up in 2014 creating a committee to review the disaster core competencies established by the ICN Framework of Disaster Nursing Competencies (Hutton & Gebbie, 2016). This

committee was established to review disaster core competency guidelines in a systematic way (Hutton & Gebbie, 2016).

The ICN Framework of Disaster Nursing Competencies is considered the gold standard of disaster nursing competencies (Hutton & Gebbie, 2016). The core competencies set by the ICN guideline have been identified as important for the development of nursing disaster education, planning, and preparedness (Hutton & Gebbie, 2016). The developing of core competency disaster guided training was deemed essential in the preparation of the disaster nursing role (Hutton & Gebbie, 2016). Psychological care competencies were also highlighted as important additions to the existing disaster competencies (Hutton & Gebbie, 2016).

Psychological Care Competencies

Evidence suggests that survivors of MCIs have higher rates of mental health morbidity and suicide due to a failure in receiving adequate psychological care (McCabe et al., 2014). MCI competencies related to mental health have increasingly received more recognition as essential competencies (King et al., 2015). Psychological competencies are essential to MCI response (King et al., 2015). Essential core competencies related to mental health found within disaster competency literature included: knowledge of psychological sequelae following disasters; the assessment and management of psychological issues; and the ability of responders to recognize and address their psychological needs (King et al., 2015). The mental health competencies identified through this study will help support nurses' MCI response.

A competency-based model of psychological care training was created by a study to enhance the dissemination of the essential knowledge, skills, and attitudes necessary for effective emergency response among health care professionals (McCabe et al., 2014). This competency-based model of psychological care training was developed from empirically supported and

consensus-derived literature (McCabe et al., 2014). A set of six core competency domains were developed pertaining to psychological care including: (1) initial contact, rapport building, and stabilization, (2) brief assessment (3) intervention, (4) triage, (5) referral, liaison, and advocacy; and (6) self-awareness and self-care (McCabe et al., 2014). This framework provides a feasible and effective method for training nurses for MCI response psychological care.

Nursing Self-Perception of Disaster Preparedness

Literature reveals that nurses' confidence, knowledge, and understanding of MCI competencies are poor. Nurses' inadequate preparedness for disaster response is a common theme in literature. Six of the 25 studies reported a low-to moderate preparedness by nurses (Baack & Alfred, 2013; Gowing et al., 2017; Labrague et al., 2017; Marin & Witt, 2015; Said & Chiang, 2019; Taskiran & Baykal, 2019).

Literature reveals specifically that nurses lack the following knowledge as it pertains to MCIs: disasters, disaster trauma care, proper protective equipment (PPE) use, biological information, infectious disease, role during disaster, hospital disaster policies, plan, and role (Said & Chiang, 2019). A lack of prior knowledge of MCI and what to expect in an MCI were key themes found among nurses in a study that analyzed the lived experiences of nurses' first time responding to disaster events (Shipman et al., 2016). Descriptive analysis of nurses' perceived readiness for major disaster response revealed a low overall perceived competence in disaster preparedness among nurses (Baack & Alfred, 2013). Nurses reported being unaware of activities related to MCI response and preparedness, provoking the overall low perceived disaster preparedness (Baack & Alfred, 2013).

Factors Contributing to Competence

The development of core competencies knowledge related to emergency preparedness and disaster response is essential for effective MCI response among nurses (Hutton, Veenema, & Gebbie, 2016; Murphy et al., 2019; Park & Kim, 2017; Said & Chiang, 2019; Taskiran & Bayakal, 2019; Thobaity, Plummer, & Williams, 2017). To improve emergency nurses' MCI response knowledge, it is essential to identify the factors that contribute to disaster nursing core competencies (Park & Kim, 2017).

Park and Kim (2017) conducted a study among 231 emergency department nurses from 12 South Korean hospitals to identify key factors influencing emergency department nursing disaster core competencies (Park & Kim, 2017). This study identified that disaster-related experience and knowledge had the greatest positive influences on disaster nursing core competencies (Park & Kim, 2017). Other factors that were identified to influence disaster core competencies in emergency nurses were related to age, work experience, and emergency department work experience (Park & Kim, 2017). Given the unpredictable nature of MCIs, it is possible that many nurses have not experienced an MCI and therefore would not have previous MCI experience to influence their disaster response. This acknowledgement highlights the importance of maintaining continuous competency-based MCI training through standardized training methods, to improve disaster preparedness (Park & Kim, 2017).

A qualitative analysis of the lived experiences from nurses' first time responding to disaster events, discovered that prior disaster exercises did not adequately prepare them for disaster response. This suggests further the need to focus on implementing evidenced-based measures for MCI education and training to improve MCI preparedness of nurses (Shipman et al., 2016).

Essential Core Competencies

Literature has identified emergency preparedness and disaster response core competencies as being the foundation of practice and standard for developing disaster education (Hutton, Veenema, & Gebbie, 2016; Murphy et al., 2019; Park & Kim, 2017; Said & Chiang, 2019; Taskiran & Bayakal, 2019; Thobaity, Plummer, & Williams, 2017). However, there is a lack of unified standardization of empirically formulated competencies for mass casualty nursing (Thobaity, Plummer, & Williams, 2017). The revised ICN Framework of Disaster Nursing Competencies was created in an effort to unify a common approach to disaster preparedness through encompassing essential competencies within eight core domains (Al-Maaitah et al., 2019).

The review of literature has identified the most common core competencies related to disaster nursing in the settings of emergency departments, critical care units, and surgical wards (Thobaity, Plummer, & Williams, 2017). A study that conducted a systematic review of literature pertaining to disaster nursing core competencies sought to discover the most common core competencies. This study concluded that the most common disaster competency domains found in literature were related to communication, planning, decontamination, safety, incident command systems, and ethics (Thobaity, Plummer, & Williams, 2017).

Furthermore, in the discovery of the essential MCI competencies, an exploratory study was conducted pertaining to nursing disaster competencies (Murphy et al., 2019). An expert consensus of 40 specialists, from seven different countries, within the field of emergency and disaster nursing developed a set of core disaster nursing competencies (Murphy et al., 2019). Consensus was reached on 62 specific emergency department nursing disaster competencies (Murphy et al., 2019). The 62 specific competencies fell under the following 12 core disaster competency domains: detection of and response to an event; incident command system; ethical

issues in triage; epidemics and surveillance; biological, isolation/quarantine, and decontamination; communication; psychological issues; special populations; accessing critical resources; and overall familiarity of disaster preparedness (Murphy et al., 2019). The ICN Framework of Disaster Nursing Competencies and EPIQ were utilized as the basis for identifying essential MCI competencies; however, the competencies established by this study reflect more specific competencies for ED nurses (Murphy et al., 2019).

Another study conducted a systematic review of literature pertaining to disaster nursing (Hugelius & Adolfosson, 2019). Thematic synthesis was utilized to extract core elements of disaster nursing to create a model for disaster nursing (Hugelius & Adolfosson, 2019). The HOPE model described the core competencies in the response phase of disaster nursing (Hugelius & Adolfosson, 2019). The HOPE model stands for (H) holistic health assessment and promotion; (O) organization and management of immediate response; (P) professional adaptation; and (E) endurance and recovery (Hugelius & Adolfosson, 2019). This model addresses the lack of models and theories that exist in the standardization of disaster nursing competencies (Hugelius & Adolfosson, 2019).

Chemical, biological, radiological, nuclear, and explosive events (CBRNE) are essential components of nursing disaster preparedness core competencies (Razak, Hignett, & Barnes, 2018). A meta-analysis involving the emergency department and CBRNE events identified themes related to improving detection and diagnosis of CBRNE exposure, knowledge of CBRNE events, and improving decontamination and PPE knowledge and performance (Razak, Hignett, & Barnes, 2018). MCI core-competency training and education should address the lack of knowledge that exists in emergency department preparedness for CBRNE events through improved design and concentration of CBRNE education (Razak, Hignett, & Barnes, 2018).

Emergency Preparedness Information Questionnaire

EPIQ is a validated and reliable emergency preparedness and disaster response questionnaire consisting of knowledge-based questions aimed at evaluating nurses' understanding of core competencies related to emergency preparedness and disaster response (Georgino, Kress, Alexander, & Beach 2015). This questionnaire has been used in several studies as a tool for nurses' self-reported understanding of emergency preparedness and disaster response competencies (Garbutt et al., 2008).

EPIQ Development

The Wisconsin Nurses Association (WNA), recognizing the educational needs of nurses in mass casualty and emergency preparedness, developed a coalition to create a nursing emergency preparedness self-assessment survey from critical competencies related to large-scale emergency events (Wisniewski, Dennik-Champion, & Peltier, 2004). The coalition consisted of the following organizations and agencies: the WNA Emergency Preparedness Self-Assessment Survey Task Force, Wisconsin Nursing Coalition, Wisconsin Medical Society, University of Minnesota Department of Health Preparedness, Wisconsin Department of Health and Family Services, and Knupp and Watson, a public relations/research firm (Wisniewski, Dennik-Champion, & Peltier, 2004). EPIQ was developed by a coalition that examined literature, along with the INCMCE guidelines, to base the core competency domains of EPIQ (Wisniewski, Dennik-Champion, & Peltier, 2004). The INCMCE guidelines were similarly utilized as the basis for the development of the ICN Framework for Disaster Nursing Competencies.

EPIQ focuses on evaluating eight MCI core competency domains based on the INCMCE guidelines (Garbutt et al., 2008). This 44-item questionnaire consists of knowledge-based questions evaluating nurses' understanding of eight core competencies related to emergency

preparedness and disaster response: (1) triage and basic first aid, (2) detection, (3) ability to access critical care resources and reporting, (4) Incident Command System (ICS), (5) isolation, quarantine, and decontamination, (6) psychological issues and specialty populations, (7) epidemiology and clinical decision making, and (8) communication (Georgino et al., 2015).

The EPIQ questionnaire was the subject of a study that included 877 nurses. (Wisniewski, Dennik-Champion, & Peltier, 2004). EPIQ was placed online and communicated through health networks that consisted of health departments, hospitals, clinics, emergency rooms, and other agencies. Through these organizations and agencies nurses responded to the questionnaire (Wisniewski, Dennik-Champion, & Peltier, 2004). Overall understanding of emergency preparedness and disaster response core competencies was demonstrated to be low among nurses with an overall EPIQ score of 2.29 (Wisniewski, Dennik-Champion, & Peltier, 2004). The least familiarity competencies demonstrated by the respondents were related to communication, epidemiology, and clinical decision making (Wisniewski, Dennik-Champion, & Peltier, 2004). Results from this study demonstrated high internal reliability of EPIQ (Wisniewski, Dennik-Champion, & Peltier, 2004).

EPIQ Scoring

EPIQ consists of 44 knowledge-based questions based on the eight core competencies related to emergency preparedness and disaster response. Nurses that respond to this questionnaire rate their familiarity with each question based on a Likert scale ranging from five (very familiar) to one (not familiar) (Wisniewski, Dennik-Champion, & Peltier, 2004). This same scale is utilized at the end of the survey to ask nurses to rate their overall level of familiarity with MCI core competencies (Wisniewski, Dennik-Champion, & Peltier, 2004). The scores from each question in the survey are totaled up from each of the eight competency domains. The average

self-assessed familiarity scores from each core domain are then ranked in order of highest to lowest familiarity. The overall familiarity scores are also included and compared in the analysis (Wisniewski, Dennik-Champion, & Peltier, 2004).

An adapted version of EPIQ was utilized in a study conducted by Georgino, Kress, Alexander, and Beach (2015). The 44 questions of EPIQ were condensed to 18 questions on the pre-questionnaire and 20 questions on the post-questionnaire (Georgino et al., 2015). The eight core competencies of the original EPIQ remained but provided a more in-depth definition of each level of familiarity allowing for fewer questions (Georgino et al., 2015). The post-questionnaire contained a free response area that allowed participants to provide feedback on how the educational course could be improved (Georgino et al., 2015).

EPIQ Use

EPIQ is noted in literature to be a reliable and valid tool to evaluate nurses' emergency preparedness and disaster response core competency understanding (Garbutt et al., 2008; Georgino et al., 2015.; Worrall, 2012). Garbutt et al. (2008) expanded on the original study design of the EPIQ but included as larger sample size of participants. This study focused on the self-reported familiarity level of nurses regarding emergency preparedness and disaster response competencies. An online application of the EPIQ was made available for nursing response. Evaluation of 776 completed online EPIQ surveys by nurses was utilized to conclude important implications about familiarity with emergency preparedness and disaster response competencies (Garbutt et al., 2008). This study demonstrated that each of the eight domains of the EPIQ were shown to have a strong significance in the linking of nursing familiarity with emergency preparedness overall (Garbutt et al., 2008).

A pilot study was conducted in the United Kingdom to evaluate the adaptation and support of EPIQ by nurses and healthcare assistants from a minor injury unit (Worrall, 2012). Of the 41 participants, 33 were nurses (Worrall, 2012). Participants completed EPIQ pre- and post-completion of an education intervention related to emergency response (Worrall, 2012). The results from the study demonstrated statistically significant differences in the mean familiarity score pre- and post-intervention (Worrall, 2012). As an instrument for familiarity evaluation, the use of the EPIQ to assess nurses' self-reported disaster preparedness was demonstrated to be strong. (Worrall, 2012).

An adapted EPIQ was utilized in a large level I trauma hospital to evaluate improvement in nurses' familiarity with disaster core competencies following a trauma nursing course (Georgino et al., 2015). Mean familiarity of emergency preparedness and disaster response core competencies had a statistically significant improvement between pre- and post-questionnaire among trauma nurses (Georgino et al., 2015). The increase in the knowledge of emergency preparedness and disaster response core competencies among nurses demonstrated that development and implementation of evidence-based education can provide competent and ready nurses to respond to MCI events (Georgino et al., 2015).

Education and Training

The acknowledgement of inadequate mass casualty and disaster knowledge by nurses has highlighted the importance of disaster education. The development and implementation of standardized competencies regarding mass casualty nursing have been the focus of providing efficient disaster education (Theodoros et al., 2015). Moreover, because of the recent focus on disaster education, studies have sought to evaluate educational interventions and methods of disaster training (Theodoros et al., 2015).

Competency-Based Training

Theodoros et al. (2015) conducted a randomized control trial (RCT) using a Switching Replication design to evaluate a specific disaster training program consisting of a single eight-hour day of the following educational methods: case studies, workshops, tutorials, group discussion, role play, demonstrations, and lecture (Theodoros et al., 2015). The educational methods were utilized to deliver competency-based disaster education (Theodoros et al., 2015).

A questionnaire was developed by the researchers to assess knowledge and behavioral intentions of the nurses participating. Knowledge was evaluated by 19 dichotomous (true or false) questions based on content from the training program. This study demonstrated improvement in nurses' disaster knowledge and self-confidence through questionnaire evaluation of the training program (Theodoros et al., 2015).

Currie et al. (2018) implemented MCI education in an undergraduate nursing program (Currie et al., 2018). MCI education was implemented into an undergraduate nursing program due to literature revealing that many practicing nurses do not receive MCI training as a part of nursing curriculum (Currie et al., 2018). A goal of this study was to ensure nurses receive baseline levels of MCI education to improve engagement in future MCI development (Currie et al., 2018). MCI education was based on and followed the core competencies established by the ICN and College of Emergency Nursing Australasia (CENA). MCI education was given over 13 weeks. After completion of the MCI education program, nursing students reported improvement in confidence, skill, and knowledge related to MCI core competencies (Currie et al., 2018).

Methods of Disaster Training Evaluated

The following studies evaluated the educational methods described above in the presentation of disaster training. A randomized control study involving emergency medicine

residents was conducted to compare video-based lecture (VBL) against traditional lecture (TL) for the education of disaster competencies including mass triage, decontamination, and PPE (Curtis et al., 2018). VBL outperformed TL in practical skills, but when comparing improvement in knowledge post-intervention, both methods showed similar results (Curtis et al., 2018).

Case-based learning (CBL) was compared to simulation exercises (SE) in disaster training through an RCT of nurses in India enrolled in the INDO-US Emergency Medicine Summit (Aluisio et al., 2016). Both CBL and SE were compared to the didactic teaching as the control group (Aluisio et al., 2016). CBL significantly improved disaster preparedness and was shown to be superior to SE in educational translation of disaster knowledge (Aluisio et al., 2016). It is suggested through this study that CBL may be more efficacious than SE in the education and training of nurses in disaster preparedness (Aluisio et al., 2016).

Khan (2018) conducted an RCT to evaluate the use of tabletop exercise as an intervention to improve MCI triage among hospital-based medical and nursing staff. Tabletop exercise and written paper instructions were compared as the educational methods of disaster triage (Khan, 2018). When asked to triage 20 disaster case patients after MCI triage training, those that participated in an MCI tabletop exercise demonstrated higher accuracy and shorter time to triage (Khan, 2018).

MCI Triage Method Evaluation

MCI triage is an essential MCI competency related to emergency preparedness and disaster response. A quasi-experimental study was conducted to compare methods of MCI triage to evaluate time to triage and accuracy of triage by emergency department nurses (Curran-Sills & Franc, 2017). Simple Triage and Rapid Treatment (START) triage when utilized by ED nurses demonstrated 105 seconds per patient faster triage time compared to Canadian Triage and Acuity

Scale CTAS triage (Curran-Sills & Franc, 2017). Both MCI triage methods demonstrated similar accuracy. The START triage method did, however, have a faster time to triage demonstrated by nurses. START is commonly incorporated into many hospitals emergency preparedness plans warranting its inclusion into MCI core competency training of ED nurses (Curran-Sills & Franc, 2017).

Strength and Generalizability of Evidence

The Nursing Melnyk Level of Evidence (LOE) Pyramid was utilized to appraise the quality of research. The Melnyk Levels of Evidence hierarchy rates articles on level of evidence from highest to lowest. Level I evidence is the highest and Level VII evidence is the lowest (Melnyk & Fineout-Overholt, 2015). The review of literature yielded the following appraisal: three level II's, three level III's, 11 level V's, eight level VI, and one level VII (See Appendix A for review of literature).

This literature review identified a lack of literature addressing MCI competencies specifically for emergency department nurses, as well as a lack of randomized control trials (RCT), and meta-analysis of RCT related to MCI. The overall strength of evidence in this literature review was low to moderate according to the Melnyk LOE Pyramid. The strength of evidence does support competency education along with the use of emergency preparedness and disaster response guidelines in the education of MCI nursing education and training. Literature supports the need for increasing MCI awareness among nurses along with implementing interventions to support translation of MCI knowledge.

Generalizability of the evidence collected does highlight the complexity of MCI and nursing education. Many limitations were evident through literature pertaining to small sample size, lack of randomized control groups, and convenience sampling. The importance of MCI

nursing education is made evident through the volume of literature pertaining to it. This evidence emphasizes the importance of promoting education and training of nurses related to MCI response, and gives further credence to the need for this EBP project.

Conceptual Framework

This EBP scholarly project utilized the Iowa Model of Evidence-Based Practice as its conceptual framework model (See Appendix D). (Iowa Model Collaborative, 2017). The Iowa Model reflects the DNP essentials I: Scientific Underpinnings for Practice, through the integration of nursing science-based concepts to evaluate knowledge and new approaches to practice (American Association of Colleges of Nursing, 2006). This framework addresses the critical decision-making process involved in implementing EBPs (Iowa Model Collaborative, 2017). Permission to use this framework in this scholarly project was granted by the University of Iowa (See Appendix D). This framework will be further utilized to help with translation of evidence into practice (Iowa Model Collaborative, 2017). The steps in the Iowa Model of Evidence-Based Practice include: identifying a problem focused trigger for this project; determining organization priority; formation of a project team; research assembly; critique and synthesis of evidence; piloting the practice change design; evaluation of the change in practice to determine if change is appropriate; continuation of quality evaluation; and dissemination of the results (Melnyk & Fineout-Overholt, 2015).

The first step in the Iowa Model is to identify the trigger or opportunity that exists in practice (Melnyk & Fineout-Overholt, 2015). The identification of triggers from either clinical problems or new knowledge highlights the opportunities to improve practice (Melnyk & Fineout-Overholt, 2015). There were several triggers identified in support of this project to include: the threat of MCIs; the focus on MCI by governing bodies and organizations; the importance of the

emergency department in MCI response; the lack of nurses prepared to respond to major disasters; the lack of nurses familiar with core emergency preparedness and disaster response competencies; the lack of standardized emergency preparedness and mass casualty core competency education and training; the recommendation to utilize competency-based education for MCI preparedness and response training; and the recommendation to utilize the ICN Framework of Disaster Nursing Competencies in development of MCI core competency education.

The purpose of this scholarly project was to raise awareness among ED nurses of the importance of MCI preparedness and provide them with core competency education and training related to MCI. The following clinical question was asked: for emergency department nurses, does an educational intervention focused on MCI core competency-based education improve awareness of mass casualty related emergency preparedness and disaster response core knowledge competencies as demonstrated by increased modified EPIQ scores? The ICN, WHO, JCAHO, CMS, and the ENA all agree that emergency preparedness and disaster response are essential competencies of MCI that nurses must possess, placing emphasis on the priority of this project (Al-Maaitah et al., 2019; Nadworny, 2019; WHO & ICN, 2009).

In commitment to the topic, a team was developed following the Iowa Model of EBP (Melnyk & Fineout-Overholt, 2015). The formed team consists of the project leader, the project chair, the Director of Emergency Services at the community-based hospital, the ED education coordinator, and the ED disaster education coordinator. The review of literature demonstrated the need for the project, providing sound scientific evidence in research related to MCIs. The team collaborated to ensure the successful development, implementation, and evaluation of the practice change (Melnyk & Fineout-Overholt, 2015).

Approval of this scholarly project was obtained from the International Review Board (IRB) at the designated university and community-based hospital. The Iowa Model of EBP was utilized in this project to guide implementation of the designed educational intervention (Melnyk & Fineout-Overholt, 2015). Results from the educational intervention were evaluated after implementation to assess the appropriateness of practice change according to the Iowa Model of EBP (Melnyk & Fineout-Overholt, 2015). The results from this EBP pilot project demonstrated effective improvement in the awareness of emergency preparedness and disaster response competencies along with improvement in self-reported confidence among new orienting ED nurses to respond to MCIs. The results were disseminated in the community-based hospital ED through email and posters (Melnyk & Fineout-Overholt, 2015).

SECTION THREE: METHODOLOGY

This scholarly project consisted of implementing an MCI emergency preparedness and disaster response core competency-based educational course for new orienting emergency department nurses. A quasi-experimental approach was utilized for data collection and analysis. The Iowa Model for Evidence-Based Practice was utilized to guide the implementation of this pilot study (Iowa Model Collaborative, 2017). Success was measured through pre- and post-intervention questionnaires to demonstrate awareness of MCI core competencies related to emergency preparedness and disaster response.

Variables

The independent variable was an MCI emergency preparedness and disaster response core competency-based educational intervention for new orienting ED nurses. Evidence-based disaster guidelines and peer-reviewed research were utilized to devise education. Methods of education included: lecture, tabletop exercise, and cased-based scenario methods. The dependent

variable was ED nurses' awareness of MCI emergency preparedness and disaster response competencies.

Design

This EBP scholarly project consisted of a quasi-experimental design including pre-questionnaire and post-questionnaire utilizing a modified version of EPIQ. The relationship between the independent and dependent variables was evaluated utilizing this study design to determine the effectiveness of the MCI educational intervention among new orienting ED nurses. New orienting ED nurses completed a pre-intervention modified EPIQ to assess awareness of MCI emergency preparedness and disaster response core competencies. A post-intervention modified EPIQ was completed after the educational intervention by the same nurses to evaluate for improvement in the awareness of MCI emergency preparedness and disaster response competencies.

Measurable Outcomes

The measurable outcomes for this project include:

1. After an MCI educational intervention, new orienting ED nurses will demonstrate improved awareness of competencies related to MCI emergency preparedness
2. After an MCI educational intervention, new orienting ED nurses will demonstrate improved awareness of competencies related to MCI disaster response.
3. After an MCI educational intervention, new orienting ED nurses will demonstrate an increased self-reported confidence in their ability to respond to MCIs

The outcomes related to new orienting ED nurses' awareness of MCI emergency preparedness and disaster response core competencies were assessed before and after completion of the MCI educational intervention. EPIQ was utilized in a modified version to assess the

participants' overall awareness of MCI emergency preparedness and disaster response core competencies prior to the intervention. Post-intervention, the modified EPIQ assessed the participants' overall awareness of MCI competencies and awareness with individual competencies pertaining to emergency preparedness and disaster response, as well as including a free response section for participants to provide feedback on opportunities for improving future MCI educational training. New orienting ED nurses' self-reported confidence to respond to MCI's was assessed pre-intervention and post-intervention with a question following the modified EPIQ questionnaire asking nurses to rate their level of confidence in their ability to respond to an MCI event.

Setting

The setting for this EBP project was an emergency department at a community-based, level II trauma-designated hospital. This project aligns with the organization's commitment to provide excellent care through integrity, teamwork, and advanced, comprehensive care for patients, facilitated by the pursuit of quality improvement (Centra Health, n.d.).

As discussed previously, MCIs significantly impact health care resources, quickly depleting available resources. This demands action from healthcare organizations to properly prepare nurses for MCI response. Limited knowledge of MCI emergency preparedness and disaster response competencies by nurses negatively impact the outcomes of patients during an MCI response. Competency-based education and training is essential for nurses to develop the knowledge necessary to ensure effective responses to MCIs (Gowing et al., 2017; Taskiran & Bayakal, 2019; Thobaity, Plummer, & Williams, 2017).

This EBP scholarly project further aligns with the organization's commitment to excellent care and pursuit for quality improvement. Raising awareness of MCI emergency

preparedness and disaster response competencies among new orienting ED nurses was done in efforts to improve their MCI response. This project also aimed to provide the organization with a defined process for annual MCI education for ED nurses through guideline-driven, competency-based education, tabletop exercises, and case-based triage scenarios. Support for this project was received by the ED Director, ED Nursing Educator, and ED Disaster Education Coordinator. A letter of support for this EBP scholarly project was obtained from the ED director (See Appendix C for site approval). The project leader worked with the ED Educator and ED Disaster Education Coordinator to ensure successful implementation of the project within the emergency department.

Population

The population targeted for this EBP scholarly project was new orienting nurses within the emergency department at a community-based, level II trauma-designated hospital. Emergency department nurses are a crucial population to receive MCI emergency preparedness and disaster response competency education as they are often among the first responders to MCI events (Murphy et al., 2019). The sample was selected through convenience sampling, as only those who volunteered to participate were included. Exclusion criteria included all other nursing staff within the ED other than new orienting nurses.

Subjects

A total of 20 new orienting ED nurses were invited to participate in the proposed project. The new orienting ED nurses were enrolled by the ED Education Coordinators into monthly ED internship classes with ranging ED specific topics aimed at supporting their transition into effective independent nurses. From the new orienting ED nurses, participants were asked to

voluntarily join the proposed MCI emergency preparedness and disaster response core-competency course.

Ethical Considerations

The project leader completed research ethics training to ensure protection of human subjects (See Appendix B for the Collaborative Institutional Training Initiative (CITI) certificate). The EBP scholarly project was presented to the ED Director for approval. A letter of support from the ED Director was obtained to conduct the study (See Appendix C). The project leader presented a defense for the EBP scholarly project to the project's chair. After obtaining approval, the EBP scholarly project was submitted to and approved by the Institutional Review Board (IRB) at the participating university. Upon approval from the university's IRB, the EBP scholarly project was submitted to and approved by the IRB at the community-based, level II trauma-designated hospital that served as the project site.

Human Subjects Protection

The EBP scholarly project presented minimal risk to participants, as the proposed intervention involved an MCI educational course for new orienting ED nurses. New orienting ED nurses choose to participate voluntarily. Participating nurses' rights were protected, as their names were not disclosed. Participants were identified by a unique number identifier. The project leader provided a modified version of EPIQ to the participants, and each participant used the same unique number identifier for both project questionnaires. The questionnaires provided to participants was through the online platform SurveyMonkey©. The data from EPIQ, along with the data from questions pertaining to demographics and self-reported MCI response confidence were compiled using an Excel file that was stored on a password-protected computer by the project leader. Data on the password-protected computer Excel file was only accessed by the

project leader to ensure privacy and confidentiality of the participants. A separate password-protected computer Excel file was utilized to display the results from the study. None of the participating individuals were compensated for their participation in the project. No copies of the questionnaires were created and after three years the data will be permanently deleted from the computer utilizing commercial software.

Instruments/Tools

The Emergency Preparedness Information Questionnaire (EPIQ) was utilized to evaluate new orienting ED nurses' awareness of MCI emergency preparedness and disaster response core-competencies. Georgino et al. (2015) describe the measurement of awareness, as the assistance in forming the basis for the acquisition of new information. EPIQ is the only tool found in the literature to demonstrate reliability and validity in the evaluation of nurses' perceived awareness of core-competencies related to emergency preparedness and disaster response (Georgino et al., 2015). This instrument does not utilize the term "awareness," but rather refers to "familiarity" as the term by which nursing understanding is measured.

EPIQ Development

EPIQ was first developed in 2002 in an effort to identify the core competencies required by nurses in response to disaster events and further evaluate their perceived familiarity with the established competencies (Georgino et al., 2015). This tool was originally implemented and evaluated by the Wisconsin Nurses Association in a large study that included 877 nurses (Wisniewski et al., 2004). EPIQ was evaluated again in the assessment of nurses' familiarity with emergency preparedness and disaster response core competencies in another study involving 776 nurses (Garbutt et al., 2008). Both studies sought to raise awareness of nurses' self-reported familiarity with emergency preparedness and disaster response competencies

(Garbutt et al., 2008; Wisniewski et al., 2004). It was demonstrated that each of the eight domains of the EPIQ: (1) triage and basic first aid, (2) detection, (3) ability to access critical care resources and reporting, (4) Incident Command System (ICS), (5) isolation, quarantine, and decontamination, (6) psychological issues and specialty populations, (7) epidemiology and clinical decision making, and (8) communication, were shown to have a strong significance in the linking of nursing familiarity with emergency preparedness and disaster response overall (Garbutt et al., 2008; Wisniewski et al., 2004). EPIQ was utilized to evaluate pilot studies conducting nursing emergency preparedness and disaster response education. Both studies demonstrated the EPIQ to be a strong instrument for the evaluation of nurses' familiarity with emergency preparedness and disaster response core competencies (Worrall, 2012; & Georgino et al., 2015).

Modified EPIQ Development

The use of EPIQ in prior studies did not utilize a pre- and post-questionnaire design to evaluate a learning intervention. Georgino, Kress, Alexander, and Beach (2015) utilized a modified version of the EPIQ to evaluate trauma nurses' knowledge of emergency preparedness and disaster response competencies after implementing an evidence-based educational questionnaire (Georgino et al., 2015). To accommodate for the limited timeframe of the project, the project leader implemented the pre- and post-questionnaires, educational session, and case studies. The 44 questions of the EPIQ were condensed to 18 questions on the pre-questionnaire and 20 questions on the post-questionnaire (Georgino et al., 2015) The post-questionnaire contained a free response area to allow for feedback on how the educational course could be improved (Georgino et al., 2015). The eight core competencies of the original EPIQ remained the same but provided a more in-depth definition of each level of familiarity, allowing for fewer

questions (Georgino et al., 2015). Data from the pre- and post-intervention modified EPIQ scores in this study compared mean familiarity scores to determine if a statistically significant difference in familiarity of emergency preparedness and disaster response competencies among trauma nurses existed (Georgino et al., 2015). This study demonstrated a statistically significant improvement in trauma nurses' mean familiarity of emergency preparedness and disaster response competencies (Georgino et al., 2015). In another study the EPIQ was utilized again in a pre- and post-questionnaire design to evaluate an educational intervention on emergency response provided to nurses and healthcare assistants at a hospital (Worrall, 2012). The results from the study demonstrated statistically significant differences in the mean familiarity score pre- and post-intervention (Worrall, 2012). The use of EPIQ to assess nurses' self-reported disaster preparedness was demonstrated to be strong as an instrument for familiarity evaluation (Worrall, 2012).

Use of the Modified EPIQ

The EBP scholarly project implemented the modified EPIQ in the evaluation of new orienting ED nurses' awareness of MCI emergency preparedness and disaster response core competencies. Testing, which may offer better objectivity, was not utilized to show improvement in new orienting ED nurses' awareness of MCI emergency preparedness and disaster response because of the limited time between implementation of the pre- and post-questionnaire (four-hours). Objective testing would be more appropriate if the educational intervention provided more time for formal evaluation. Furthermore, changes to the EPIQ tool may affect its reliability and validity, but the use of the modified EPIQ in a pre- and post-questionnaire design, as demonstrated by Georgino et al. (2015) did show a statistically significant increase in nurses' familiarity with each core competency domain pertaining to emergency preparedness and

disaster response (Georgino et al., 2015). The modified EPIQ consists of knowledge-based questions that evaluate nurses' familiarity with eight core competencies of emergency preparedness and disaster response: (1) triage and basic first aid, (2) detection, (3) ability to access critical care resources and reporting, (4) Incident Command System (ICS), (5) isolation, quarantine, and decontamination, (6) psychological issues and specialty populations, (7) epidemiology and clinical decision making, and (8) communication (Georgino et al., 2015). The familiarity level within each competency is assessed through a Likert scale (one to five) with one indicating (not familiar) and five indicating (very familiar) (Georgino et al., 2015). A copy of the modified EPIQ tool and permission to utilize this tool is included (See Appendix F, Appendix G, Appendix H, and Appendix I). Basic demographics were collected from the participants in the pre-intervention survey including gender and years of experience as a registered nurse. Participants were asked two additional questions to further assess their past response to an MCI and if they had formal MCI education or training within the last year. Pre- and post-modified EPIQ were provided to participants through SurveyMonkey © (See Appendix H & I).

Tabletop Exercise

Tabletop exercises (TTE) offer a low-stress approach to learning while also offering high-impact strategy to knowledge translation (Evans, 2019). TTE including an MCI scenario were utilized to improve MCI knowledge translation among the participants. Permission to utilize the Shasta Medical and Health 2016 Mass Casualty Incident Tabletop Exercise was obtained and was implemented as part of the educational intervention (See Appendix M). Case-based triage learning (CBL) scenarios were incorporated into the TEE and focused on refining MCI triage knowledge and application.

Intervention

The educational design of this EBP scholarly project consisted of implementing an MCI emergency preparedness and disaster response core competency-based educational intervention for new orienting ED nurses at a community-based, level II trauma-designated hospital. This educational intervention utilized lecture, a tabletop exercise, and cased-based scenarios as methods for education. Literature supports competency-based educational training as an effective measure to improve disaster response knowledge (Hutton, Veenema, & Gebbie, 2016; Murphy et al., 2019; Park & Kim, 2017; Said & Chiang, 2019; Taskiran & Bayakal, 2019; Thobaity, Plummer, & Williams, 2017). MCI emergency preparedness and disaster response core competency-based education were guided by the ICN Framework for Disaster Nursing Competencies version 2.0 (Al-Maaitah et al., 2019).

PowerPoint Presentation

This project leader created a PowerPoint presentation to provide new orienting ED nurses with MCI core competency-based educational information related to emergency preparedness and disaster response. This education provided new orienting ED nurses with an overview on MCI emergency preparedness and disaster response competencies found in the ICN Framework for Disaster Nursing Competencies version 2.0. The eight domains include: (1) preparation and planning, (2) communication, (3) incident command systems, (4) safety and security, (5) assessment, (6) intervention, (7) recovery, and (8) law and ethics (See Appendix J) (Al-Maaitah et al., 2019). This EBP scholarly project utilized the eight core competency domains established by the ICN as the framework for developing MCI emergency preparedness and disaster response core competency education. The above literature review, guidelines, and government agencies such as the Centers for Disease Control (CDC) and U.S, Department of Health and Human

Services were utilized to develop the educational information. MCI triage is an essential competency of MCI emergency preparedness and disaster response. The Simple Triage and Rapid Treatment (START) triage method has been demonstrated as an accurate and efficient method for MCI triage, and because of this was included in the competency-based MCI education (Curran-Silla & Franc, 2017) (See Appendix K). The PowerPoint presentation took approximately three hours for the participating nurses to complete through participation in viewing and lecture.

Tabletop Exercise and Case-Based Scenarios

The Shasta Medical and Health 2016 Mass Casualty Incident Tabletop Exercise was implemented as part of the educational intervention (See Appendix M). Case-based learning (CBL) scenarios were incorporated into the TEE and focused on refining MCI triage knowledge and application. The TTE took approximately 45 minutes to complete among the new orienting ED nurses. The incorporated CBL scenarios took approximately 15 minutes to complete.

MCI Educational Course

The education of new orienting ED nurses in MCI emergency preparedness and disaster response took place during a four-hour class. The class was held through the secured online platform, Zoom ©. The class consisted of the interventions described above to disseminate MCI emergency preparedness and disaster response knowledge, which included PowerPoint lecture, tabletop exercise, and case-based triage scenarios.

New orienting ED nurses completed a pre-intervention modified version of the EPIQ to assess baseline awareness of MCI emergency preparedness and disaster response core competencies. In addition to the pre-intervention questionnaire, the participants also answered a question asking them to rate their level of confidence in responding to an MCI event. Confidence

was rated similarly to the EPIQ with a Likert scale one to five, with one indicating (very low confidence) and five indicating (very high confidence). The participants were asked to provide simple demographics related to gender and years of experience as a registered nurse. Participants were asked two additional questions to assess their past response to an MCI and if they had formal MCI education or training within the last year.

The MCI education course began with a PowerPoint lecture through an online format covering the eight core competency domains of the ICN Framework for Disaster Nursing Competencies version 2.0. Peer-reviewed literature and government agencies such as the Centers for Disease Control (CDC) and U.S. Department of Health and Human Services were utilized to compliment and support education derived from the ICN Framework for Disaster Nursing Competencies.

Following the PowerPoint lecture there was participation in a tabletop exercise involving discussion of an MCI scenario and utilization the knowledge obtained from the lecture. The tabletop exercise utilized the framework of the Shasta Medical and Health 2016 Mass Casualty Incident Tabletop Exercise for the MCI scenario. The tabletop exercise also incorporated case-based triage scenarios in the discussion of MCI triage.

The MCI educational course was completed after the resolution of the TTE and CBL, and participants were asked to immediately complete post-questionnaire evaluation of their awareness of MCI emergency preparedness and disaster response competencies utilizing a post-intervention modified version of the EPIQ. The post-intervention EPIQ contained a free response area to allow for feedback on how the educational course could be improved (Georgino et al., 2015). Participants were again be asked to rate their level of confidence in responding to an MCI event.

Timeline of the Project

- On January 31st, 2020, the project leader presented the project proposal to the practice departmental director and key stakeholders to receive approval.
- On March 3rd, 2020, the project leader presented the project proposal to the project chair and received approval.
- On March 4th, 2020, the project leader submitted the project proposal to LU's IRB.
- On March 10th, 2020, the project leader received approval from LU's IRB for the project proposal.
- On March 13th, 2020, the project leader defended the proposed project to the research committee at the project site
- On March 31st, 2020, the project leader received approval from the project site IRB for the project proposal.
- On April 4th, 2020 the project leader made the pre-questionnaire available for participants to take on SurveyMonkey ©.
- On April 10th, 2020, the project leader delivered the intervention during a four-hour MCI class.
- On April 10th, 2020, the project leader made the prost-questionnaire available for participants to take on SurveyMonkey © following completion of the intervention.
- On April 21st, 2020, the project leader collected all pre- and post-questionnaires for data analysis
- On June 1st, 2020, the project leader completed the data analysis
- On September 30th, 2020, the project leader will disseminate project results at the practice site

Data Collection

The pre-intervention questionnaire and post-intervention questionnaire utilizing the modified EPIQ are the described tools for data collection. Awareness of MCI emergency preparedness and disaster response core competencies were compared between the pre-and post-intervention questionnaires. Data related to basic demographics, MCI experience, and level of confidence to respond to an MCI event by the participants were collected and utilized to examine the differences in MCI preparedness and response awareness among new orienting ED nurses. Data collected from the participants is securely held in a password-protected computer Excel file. Data analysis was completed through the program IMB® Statistical Package for the Social Sciences® (SPSS®).

Team Members

The project team consisted of the project leader, project chair, ED Educator, and ED Disaster Education Coordinator. The project leader created and implemented the pre-questionnaire, post-questionnaire, and educational intervention. The project leader was responsible for collecting data from the participants. The project chair served in the capacity of guidance through the development, implementation, and evaluation of the proposed scholarly project. The ED educator and ED Disaster Education Coordinator assisted in the assembling of the new orienting ED nurses MCI educational course and supported successful implementation of the EBP scholarly project at the designated community-based hospital.

Feasibility Analysis

The EBP scholarly project feasibility will be discussed pertaining to the following: personnel, resources, technology, and cost/benefit.

Personnel

Support for the EBP scholarly project was obtained by the project leader from the director of emergency services at the community-based, level II trauma designated hospital. Discussion with the ED Educator and the ED Disaster Education Coordinator, on involvement of this project within the emergency department lead to the creation of a four-hour MCI education and training course. This course was intended to provide new orienting ED nurses with the awareness of basic MCI core competency related to emergency preparedness and disaster response. This course was determined by the project team members to be the most feasible way to incorporate MCI education and training into the new orienting ED nurses' schedules. The essential personnel participating in and conducting the EBP scholarly project included: the project leader, project chair, ED education coordinator, ED disaster education coordinator, editor, statistician, and new orienting ED nurses.

Resources and Technology

The necessary resources and technology used to conduct and analyze the EBP scholarly project included:

- Personal computer
- Zoom ©
- SurveyMonkey ©
- PowerPoint
- Excel
- SPSS Software

Cost and Benefit Analysis

When considering feasibility of a project, cost evaluation must be included. All costs related to the EBP scholarly project were covered by the project leader. The educational material

was presented as a PowerPoint lecture and did not have associated costs. Costs associated with utilizing the secured online platform, Zoom ©, were covered by the project leader. The four-hour class time for new orienting ED nurses was already incorporated into the new orienting work schedule and did not have any associated extra costs. There were no other expenses for this EBP scholarly project. The benefits from the scholarly project outweighed the costs.

Statistical Analysis and Evaluation

Data from the pre- and post-intervention questionnaires were analyzed by the program IMB ® Statistical Package for Social Sciences ® (SPSS ®). The data analyzed were descriptive in nature. The data from the pre-intervention and post-intervention questionnaires were coded as "pre-intervention" and "post-intervention." The level of awareness within each of the competencies addressed on the questionnaires was self-reported by the participants through scoring utilizing a Likert scale. The term "familiarity" was utilized in the modified EPIQ to refer to awareness, and this score was on a scale of one to five, with one (not familiar) to five (very familiar). The number coding of familiarity was entered into SPSS. The level of significance and differences between the "pre-intervention" and "post-intervention" questionnaires were examined utilizing a t-test. The demographics and qualitative information collected during the pre-survey were analyzed in Excel to gain insight into new orienting ED nurses' awareness of MCI emergency preparedness and disaster response core competencies.

SECTION FOUR: RESULTS

A total of 20 new orienting ED nurses were invited to participate in the project. There were 17 new orienting ED nurses that participated in the MCI educational course. From those that participated in the course, only 14 completed both the pre- and post-questionnaire. Therefore, only the 14 new orienting ED nurse participants that completed both pre- and post-

questionnaires were calculated into the results of this study. The following results from this scholarly project will be discussed below.

Demographics

Sample Size

Pre- and post-questionnaire data were collected from 17 participants (n=17). Of these participants, 14 completed both the pre- and post-questionnaire (n=14). Since this project was assessing the improvement in both awareness of MCI core competencies and self-confidence to respond to MCI, those that did not complete both pre- and post-questionnaire were dropped from data analysis.

Gender

Pre-intervention demographic results revealed that 35.7 percent of the participants were male, and 57.1 percent of the participants were female. One participant chose to not answer the demographic question related to gender.

Years of Professional Experience as an RN

The percentage of the participants with less than one year of experience as an RN was 42.9 percent, and the other 57.1 percent of participants reported one-two years of experience as an RN.

Experience with Responding to an MCI

All participants reported that they did not have any prior experience with responding to an MCI, and only one participant reported having formal MCI education or training within the last year.

Missing Data

As mentioned previously three participants did not complete either a pre- or post-questionnaire survey. The pre-questionnaires completed by participants were not missing any information except for one missing response from the demographic question related to gender. In the post-questionnaires completed by participants, four participants responded to the question asking to provide feedback on how the educational session could be improved. There was no missing data related to the measurable outcomes.

Assumptions

Two assumptions were made before the statistical analysis. The first was that the participants had limited knowledge of MCI emergency preparedness and disaster response before completing the educational intervention. The second assumption was that participants did not discuss any of the questions related to the pre- and post-questionnaire with anyone while completing the questionnaire.

Key Findings

The following were noted as key findings for the study. A modified version of EPIQ was utilized in the pre- and post-questionnaire, to evaluate new orienting ED nurses' awareness of MCI emergency preparedness and disaster response core competencies. The modified version of EPIQ was also utilized in the pre- and post-questionnaire, to evaluate new orienting ED nurse level of self-confidence to respond to an MCI. The modified EPIQ consisted of 18 knowledge-based questions that evaluated nurses' familiarity with the eight core competencies of emergency preparedness and disaster response. Participants ranked their level of awareness to questions within each of the eight core competency domains through a Likert scale one to five, with one indicating (not familiar) and five indicating (very familiar). The final questions of the post-questionnaire asked participants to rank the ability this course had to improve their knowledge

regarding emergency preparedness and disaster response, and to provide feedback on how the educational course could be improved.

Descriptive statistics

Descriptive statistics for pre-questionnaire competencies demonstrated an overall mean of 2.845, standard error of 0.225, and standard deviation of 0.845. Descriptive statistics for post-questionnaire competencies demonstrated an overall mean of 3.984, standard error of 0.167, and standard deviation of 0.627.

Paired t-test

A paired t-test was utilized to evaluate the statistical significance between the pre- and post-intervention mean awareness score of all 18 competencies of the modified EPIQ. The modified EPIQ emergency preparedness and disaster response core competencies overall demonstrated a statistically significant improvement in mean awareness scores between the pre- and post-questionnaires ($p < 0.05$). Only one of the 18 core competencies were found to not have a statistically significant improvement between pre- and post-questionnaire (Q1: Rapid physical and mental assessment).

Table 1

Paired Samples t-test of Modified EPIQ

					95% Confidence Interval of the Difference				
		Mean	Std. Dev	Std. Error Mean	Lower	Upper	t	df	Sig. (2-tailed)
Pair 1	Performance of a rapid physical/mental assessment	-.429	.852	.228	-.920	.063	-1.883	13	.082
Pair 2	START Triage	-1.071	.997	.267	-1.647	-.496	-4.020	13	.001
Pair 3	Basic first aid in a large-scale event	-.857	1.027	.275	-1.450	-.264	-3.122	13	.008
Pair 4	Biological agents-Recognition	-1.286	.825	.221	-1.762	-.809	-5.828	13	.000
Pair 5	Biological agents-Modes of transmission	-.857	.770	.206	-1.302	-.412	-4.163	13	.001

Pair 6	Biological agents-Antidote/prophylactic medicine	-1.000	.555	.148	-1.320	-.680	-6.745	13	.000
Pair 7	Biological agents-Complications and adverse reactions	-1.214	.699	.187	-1.618	-.811	-6.497	13	.000
Pair 8	Biological agents-Exposure	-1.214	.802	.214	-1.677	-.751	-5.667	13	.000
Pair 9	When to report unusual set of symptoms	-1.357	1.008	.269	-1.939	-.775	-5.037	13	.000
Pair 10	Knowledge of an Emergency Operation Plan (EOP)	-1.286	.726	.194	-1.705	-.866	-6.624	13	.000
Pair 11	Process of the Incident Command System (ICS)	-1.500	.855	.228	-1.994	-1.006	-6.565	13	.000
Pair 12	Agency Preparedness	-1.357	.745	.199	-1.787	-.927	-6.817	13	.000
Pair 13	Content of the EOP at your hospital	-1.500	.760	.203	-1.939	-1.061	-7.389	13	.000
Pair 14	Isolation procedures	-1.286	.914	.244	-1.813	-.758	-5.264	13	.000
Pair 15	Signs/Symptoms of PTSD following a disaster	-1.000	.555	.148	-1.320	-.680	-6.745	13	.000
Pair 16	Appropriate psychosocial needs/resources for victims	-.786	1.122	.300	-1.433	-.138	-2.621	13	.021
Pair 17	Ability to discern and treat CBRNE victims	-1.357	.929	.248	-1.893	-.821	-5.467	13	.000
Pair 18	Critical communication of patient information during a disaster	-1.071	.730	.195	-1.493	-.650	-5.491	13	.000

Table 2

Paired Samples Mean Comparison

		Mean	N
Pair 1	Performance of a rapid physical/mental assessment (pre-test)	3.64	14
	Performance of a rapid physical/mental assessment (post-test)	4.07	14
Pair 2	START Triage (pre-test)	3.14	14
	START Triage (post-test)	4.21	14
Pair 3	Basic first aid in a large-scale event (pre-test)	3.43	14
	Basic first aid in a large-scale event (post-test)	4.29	14
Pair 4	Biological agents-Recognition (pre-test)	2.64	14
	Biological agents-Recognition (post-test)	3.93	14
Pair 5	Biological agents-Modes of transmission (pre-test)	2.93	14
	Biological agents-Modes of transmission (post-test)	3.79	14
Pair 6	Biological agents-Antidote/prophylactic medicine (pre-test)	2.50	14
	Biological agents-Antidote/prophylactic medicine (post-test)	3.50	14
Pair 7	Biological agents-Complications and adverse reactions (pre-test)	2.50	14
	Biological agents-Complications and adverse reactions (post-test)	3.71	14
Pair 8	Biological agents-Exposure (pre-test)	2.57	14
	Biological agents-Exposure (post-test)	3.79	14
Pair 9	When to report unusual set of symptoms (pre-test)	2.64	14

	When to report unusual set of symptoms (post-test)	4.00	14
Pair 10	Knowledge of an Emergency Operation Plan (EOP) (pre-test)	2.79	14
	Knowledge of an Emergency Operation Plan (EOP) (post-test)	4.07	14
Pair 11	Process of the Incident Command System (ICS) (pre-test)	2.64	14
	Process of the Incident Command System (ICS) (post-test)	4.14	14
Pair 12	Agency Preparedness (pre-test)	2.57	14
	Agency Preparedness (post-test)	3.93	14
Pair 13	Content of the EOP at your hospital (pre-test)	2.29	14
	Content of the EOP at your hospital (post-test)	3.79	14
Pair 14	Isolation procedures (pre-test)	2.86	14
	Isolation procedures (post-test)	4.14	14
Pair 15	Signs/Symptoms of PTSD following a disaster (pre-test)	3.36	14
	Signs/Symptoms of PTSD following a disaster (post-test)	4.36	14
Pair 16	Appropriate psychosocial needs/resources for victims (pre-test)	3.21	14
	Appropriate psychosocial needs/resources for victims (post-test)	4.00	14
Pair 17	Ability to discern and treat CBRNE victims (pre-test)	2.43	14
	Ability to discern and treat CBRNE victims (post-test)	3.79	14
Pair 18	Critical communication of patient information during a disaster (pre-test)	3.14	14
	Critical communication of patient information during a disaster (post-test)	4.21	14

Measurement of the self-reported level of confidence to effectively respond in an MCI event by participant demonstrated a statistically significant improvement in mean level of confidence ($p < .001$) between the pre- and post-questionnaire.

Table 3

Paired Samples t-test of Level of Confidence

					95% Confidence Interval of the Difference				
		Mean	Std. Dev	Std. Error Mean	Lower	Upper	t	df	Sig. (2-tailed)
Pair 1	Level of confidence to effectively respond in a MCI event	-1.429	.514	.137	-1.725	-1.132	-10.408	13	.000

Table 4

Paired Samples Mean Comparison

		Mean	N
Pair 1	Level of confidence to effectively respond in a MCI event (pre-test)	2.64	14
	Level of confidence to effectively respond in a MCI event (post-test)	4.07	14

Clinical Significance

To evaluate for clinical significance an alpha of 0.05 was used to assess mean difference in scores among the pre- and post-questionnaires. As stated previously, 17 of the 18 knowledge-based questions pertaining to MCI emergency preparedness and disaster response core competencies demonstrated a statistically significant improvement in awareness post-intervention as demonstrated by a p-value < 0.05. In addition, level of self- confidence to respond to an MCI had a statistically significant improvement post-intervention as demonstrated by a p-value < 0.05. Furthermore, the results from the project conclude the intervention had a direct impact on the mean difference in core competency awareness and level of self confidence among new orienting ED nurses.

Post-Questionnaire

Analysis of the post-questionnaire question “This course improved my knowledge regarding emergency preparedness and disaster response” demonstrated that most participants selected “strongly agree” (10 total participants: 71.4%) and the rest selected “agree” (4 total participants: 28.6%).

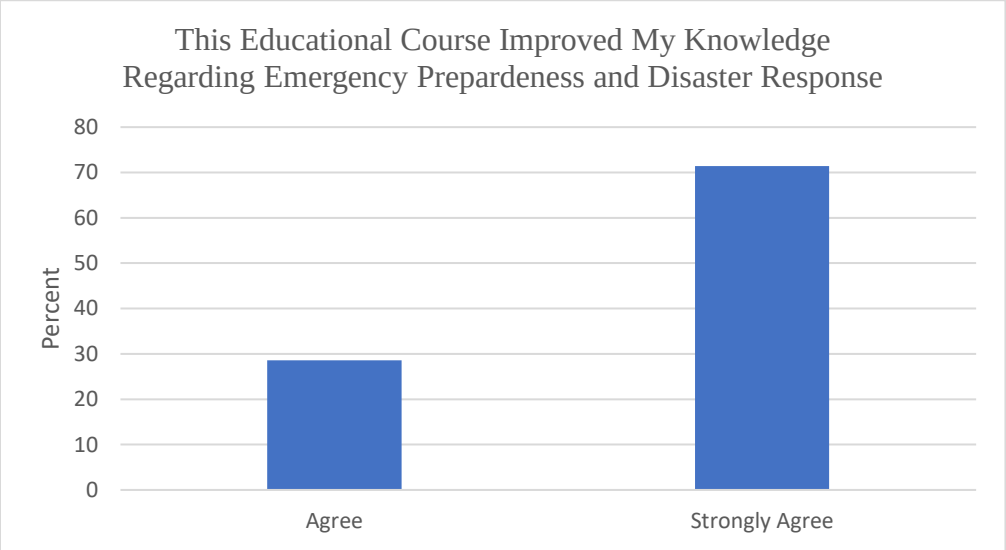
Table 5

This Educational Course Improved My Knowledge Regarding Emergency Preparedness and Disaster Response

		Frequency	Percent
Valid	Agree	4	28.6
	Strongly Agree	10	71.4
	Total	14	100.0

Figure 1

This Educational Course Improved My Knowledge Regarding Emergency Preparedness and Disaster Response



Free Response Question

The final question of the post-questionnaire was a free response question posed by the project leader to gain an understanding of ways the MCI educational course could be improved. Four participants answered this question and the following key strategies and interventions were identified by the project leader: condensing the educational material and the addition of a "Kahoot quiz" to test participants ability to triage.

Summary of Findings

The measurable outcomes for this project were: (1) after a MCI educational intervention, new orienting ED nurses will demonstrate improved awareness of competencies related to MCI emergency preparedness; (2) after a MCI educational intervention, new orienting ED nurses will demonstrate improved awareness of competencies related to MCI disaster response; (3) and after a MCI educational intervention, new orienting ED nurses will demonstrate an increased self-reported confidence in their ability to respond to MCIs. Each outcome is discussed below.

Outcome 1: Improved Awareness of MCI Emergency Preparedness

The post-intervention modified EPIQ mean awareness score results demonstrated most of the new orienting ED nurses found the MCI educational intervention to be useful. The mean differences demonstrated a higher overall mean awareness of MCI emergency preparedness post intervention ($n = 3.984$) compared to the pre-intervention ($n = 2.845$). Furthermore, paired t-test analysis of the pre- and post-intervention means demonstrated a statistical significance at alpha 0.05 with $p < 0.05$ in all 18 core competency knowledge based questions except for question one "Performance of a rapid physical and mental assessment." The results suggest there was an increase in the awareness of MCI emergency preparedness among new orienting ED nurses.

Outcome 2: Improved Awareness of MCI Disaster Response

The findings discussed above also pertain to the improved awareness of MCI disaster response. Post-intervention modified EPIQ mean awareness score results demonstrated that most of the new orienting ED nurses found the MCI educational intervention to be useful. The results suggest there was an increase in the awareness of MCI disaster response among new orienting ED nurses.

Outcome 3: Increased Self-reported Confidence to Respond to MCIs

The post-intervention modified EPIQ evaluation of participants' level of confidence to respond in an MCI event demonstrated most of the new orienting ED nurses found the MCI educational intervention to be useful in improving self-confidence to respond. The mean differences demonstrated a higher mean post-intervention self-confidence score ($n = 2.64$) compared to the pre-intervention ($n = 4.07$). Furthermore, the paired t-test demonstrated statistical significance at alpha 0.05 with $p < 0.05$. The results suggested there was an increase in the level of self-confidence to respond to MCIs among new orienting ED nurses.

SECTION FIVE: DISCUSSION

The results of this EBP project demonstrated a significant improvement in new orienting ED nurses' awareness of MCI emergency preparedness and disaster response competencies and level of confidence to respond in an MCI event. A paired t-test was utilized to measure the mean difference between the pre- and post- questionnaire. Statistical significance was demonstrated by a p-value less than 0.05. There was only one competency, "Performance of a rapid physical and mental health assessment," that did not demonstrate a statistically significant improvement between pre- and post-questionnaire testing. One explanation for there not being statistically significant improvement of this competency could be related to the high pre-questionnaire mean awareness score of 3.64 demonstrated by the new orienting ED nurses. "Performance of a rapid physical and mental health assessment" was the highest scored pre-questionnaire competency with a mean awareness score of 3.64, demonstrating there were significantly more nurses that rated themselves "familiar" with this topic than compared to other competencies. However, all the other competencies demonstrated a statistically significant improvement overall with a p-value well below 0.05. Therefore, the demonstrated improvement in new orienting ED nurses'

awareness of MCI emergency preparedness and disaster core competencies and level of self-confidence to respond in an MCI was statistically significant.

The results from this scholarly project answered the clinical question and further supported the need for an educational intervention focused on MCI emergency preparedness and disaster response core competency-based education.

Project Limitations

There were several limitations to this scholarly project. The first limitation was related to sample size. There was a small sample of size of 14 new orienting ED nurses that participated in the MCI emergency preparedness and disaster preparedness evaluation through pre- and post-modified EPIQ questionnaire. Convenience sampling was utilized due to small participant sample size, and therefore the generalizability of the results was impacted.

Another limitation was related to the Likert scale utilized to by the participants to subjectively rate their level of awareness with MCI emergency preparedness and disaster response. Testing would offer better objectivity and would have been more appropriate if the educational course provided more time, but because of the limited time between implementation of the pre- and post-questionnaire (four-hours) a Likert-scale was used instead of objective testing. Feedback from participants on the education session presented that future education courses could allow for more time or be divided into multiple sessions in order to better disperse the education regarding MCI core competencies.

Un-foreseen limitations occurred related to the COVID-19 outbreak. The educational intervention was originally designed to be presented in person and with immediate post-questionnaire assessment of MCI emergency preparedness and disaster response core competencies to occur after the education course. However, restrictions on in-person contact

required the MCI education session to be implemented utilizing Zoom ©. Likewise, the modified EPIQ questionnaire was implemented before and after utilizing SurveyMonkey ©. The use of online surveying resulted in varying times of completion of the post-questionnaire. The intended use of the post-questionnaire was to immediately assess new orienting nurses' awareness of MCI emergency preparedness and disaster response following the MCI education course. Some of the participants completed the post-questionnaire several days after the intervention. This variance in completion of the post-questionnaire could have had an effect on the results.

Significance and Implication for Practice

The results from this scholarly project have a strongly perceived benefit for future application into clinical practice in this clinical setting and others. Statistically significant improvement was demonstrated in new orienting ED nurses' emergency preparedness and disaster response core competencies and level of self-confidence to respond in an MCI event. This scholarly project demonstrated the benefit that MCI emergency preparedness and disaster response core competency education can have on increasing baseline awareness of essential MCI competencies while also improving the self-confidence of nurses to respond in an MCI event. This type of education and training could be utilized in future clinical practice to prepare nurses within the emergency department and other practice settings for MCI response.

For future practice, improving nurses' awareness of MCI emergency preparedness and disaster response core competencies will improve MCI response and offer the greatest opportunity to improve health outcomes during MCI events. Health care organizations and nurses must properly prepare nurses for MCI response and consider this a top priority for improving patient care and outcomes. As discussed previously, MCIs significantly impact health care resources, quickly depleting available resources and increasing the risk of poor patient

outcomes when combined with nurses that have limited MCI emergency preparedness and disaster response knowledge (Hutton et al., 2016; Murphy et al., 2019; Park & Kim, 2017; Said & Chiang, 2019; Taskiran & Bayakal, 2019; Thobaity, Plummer, & Williams, 2017). Therefore, it is important to ensure there is adequate MCI education and training of nurses to create efficient and confident responders to MCIs (Brown & Goodin, 2018). This scholarly project demonstrated the benefits of utilizing core competency-based education for MCI training. It is vital that healthcare organizations support a systematic and standardized approach for MCI emergency preparedness and disaster response education for nurses. There is a strong perceived benefit to utilizing established competency guidelines in the training programs created to prepare nurses for MCIs (Gowing et al., 2017; Taskiran & Bayakal, 2019; Thobaity, Plummer, & Williams 2017). The results from this project support implementing this process of MCI education into the future education and training of ED nurses on an annual basis.

Sustainability

The results from this scholarly project demonstrated that the practice change post-intervention had a statistically significant improvement in self- reported awareness of the MCI core competencies along with improved self -reported confidence to respond in an MCI. The long-term success of this project in practice would depend on barriers to implementation and continuation of the MCI core competency education and training. ED nurses would benefit from periodic repeat testing of self-reported confidence and awareness of MCI core competencies to assess for areas of practice that need to be improved. There were very low costs associated with the implementation of this scholarly project which would further support the sustainability of this practice.

Dissemination

This EBP scholarly project intended to translate evidence related to MCI response into ED nursing practice, by reporting results to practice leaders and other clinical staff. Results from this EBP project will be shared with the community-based level II trauma-designated hospital through presentation, posters, and email. This scholarly project was not only intended to increase the awareness of MCI response among new orienting emergency department nurses but will further seek to define the process that will provide MCI response training to ED nurses on an annual basis. Recommendations will be made to the supporting hospital organization to adopt the competency-based MCI response education and training interventions as the method by which ED nurses are continually educated in MCI response.

Conclusion

In conclusion, inadequacies in MCI emergency preparedness and disaster response among nurses, and lack of self-confidence to respond to MCIs has established the importance for this scholarly project. The MCI emergency preparedness and disaster preparedness competency-based education and training intervention demonstrated clinical significance in improving nurses' awareness of MCI competencies and improving self-confidence to respond to MCIs. MCI core competency education and training are vital to developing competent and confident nurses to lead effective MCI response. Future use of MCI emergency preparedness and disaster response competency-based education and training should focus on the standardization and improvement of MCI response in other nursing settings.

References

Al-Maaitah, R., Conlan, L., Gebbie, K., Hutton, A., Langan, J. C., Loke, A. Y., McClelland, A., . . . Yamamoto, A. (2019) *International Council of Nurses Core Competencies in Disaster Nursing Version 2.0.* Geneva: International Council of Nurses. Retrieved from: https://www.icn.ch/sites/default/files/inline-files/ICN_Disaster-Comp-Report_WEB.pdf

Aluisio, A. R., Daniel, P., Grock, A., Freedman, J., Singh, A., Papanagniu, D., & Arquilla, B. (2016) Case-based learning outperformed simulation exercises in disaster preparedness education among nursing trainees in India: a randomized controlled trial. *Prehospital and Disaster Medicine*. 31(5). 516-523. doi:10.1017/S1049023X16000789

American Association of Colleges of Nursing. (2006). *The essentials of doctoral education for advanced nursing practice.* Washington, D.C.: AACN

American Psychological Association. (2010). *Publication manual* (6th ed.). Washington, DC: Author.

Baack, S., & Alfred, D. (2013) Nurse's preparedness and perceived competence in managing disasters. *Journal of Nursing Scholarship*. 45(3). 281-287. doi: /10.1111/jnu.12029

Brown. J. D., & Goodin. A. J. (2018) Mass casualty shooting venues, types of firearms, and age of perpetrators in the United States, 1982-2018. *American Journal of Public Health*. 108(10). doi: 10.2105/AJPH.2018.304584

Carroll, E., Johnson, A., & Sampson, B. (2017) Trends in United States mass fatality incidents and recommendations for medical examiners and coroners. *Academic Forensic Pathology*. 7(3). 318-329. doi:10.23907/2017.029

Chism, L. A. (2013). The Doctor of Nursing Practice: A guidebook for role development professional issues (4th ed.). Burlington, MA: Jones and Bartlett Publishers

Curran-Sills, G., & Franc, J. M. (2017). A pilot study examining the speed and accuracy of triage for simulated disaster patients in an emergency department setting: Comparison of a computerized version of canadian triage acuity scale (CTAS) and simple triage and rapid treatment (START) methods. *CJEM : Journal of the Canadian Association of Emergency Physicians, 19*(5), 364-371. doi:10.1017/cem.2016.386

Currie, J., Kourouche, S., Gordon, C., Jorm, C., & West, S. (2018) Mass casualty education for undergraduate nursing students in Australia. *Nurse Education in Practice*. 28. 156-162. doi:10.1016/j.nepr.2017.10.006

Curtis, H. A., Trang, K., Chason, K. W., & Biddinger, P. D. (2018). Video-based learning vs traditional lecture for instructing emergency medicine residents in disaster medicine principles of mass triage, decontamination, and personal protective equipment. *Prehospital and Disaster Medicine, 33*(1), 7-12. doi: 10.1017/S1049023X1700718X

Evans, C. A. (2019) Tabletop exercises in the nursing classroom: An introduction for nurse educators. Nursing Forum, 54(4), 669-674. doi:10.1111/nuf.12394

Gates, J. D., Arabian, S., Biddinger, P., Blansfeild, J., Burke, P., Chang, S., Fisher, F., . . . Yaffe, M. B. (2014) The initial response to the Boston marathon bombing: Lessons learned to prepare for the next disaster. *Annals of Surgery*. 260(6). 960-966.

Garbutt, S., Peltier, J. W., & Fitzpatrick, J. (2008). Evaluation of an instrument to measure nurses' familiarity with emergency preparedness. *Military Medicine, 173*(11), 1073-1077.

Georgino, M. M., Kress, T., Alexander, S., & Beach, M. (2015) Emergency preparedness education for nurses: core competency familiarity measured utilizing an adapted

emergency preparedness information questionnaire. *Journal of Trauma Nursing*. 22(5). 240-247. doi:10.1097/JTN.0000000000000148

Gowing, J. R., Walker, K. N., Elmer, S. L., & Cummings, E. A. (2017) Disaster preparedness among health professionals and support staff: What is effective? An integrative literature review. *Prehospital and Disaster Medicine*. 32(3). 321-328. doi:10.1017/S1049023X1700019X

Hugelius, K., & Adolfsson, A. (2019) The HOPE model for disaster nursing-A systematic literature review. *International Emergency Nursing*. 45. 1-9. doi:10.1016/j.ienj.2019.03.007

Iowa Model Collaborative. (2017). Iowa model of evidence-based practice: Revisions and validation. *Worldviews on Evidence-based Nursing, 14*(3), 175-182. doi: 10.111/wvn.12223

Hsu, E. B., Jenckes, M. W., Catlett, C. L., Robinson, K. A., Feuerstein, C. J., Cosgrove S. E., Green, G., . . . Bass, E. B. (2004) Training of hospital staff to respond to mass casualty incident: summary. AHRQ Evidence Report Summaries. Retrieved from: https://www.ncbi.nlm.nih.gov/books/NBK11911/

Hutton, A., Veenema, T. G., & Gebbie, K. (2016) Review of the International council of nurses (ICN) framework of disaster nursing competencies. *Prehospital and Disaster Medicine*. 31(6). 680-683. doi:10.1017/S1049023X1600100X

Khan, K. (2018) Tabletop exercise on mass casualty incident triage, does it work? *Health Science Journal*. 12(3). 1-6. doi: 10.21767/1791-809X.1000566

King, R. K., Burkle, F. M., Walsh, L. E., North, C. S. (2015) Competencies for disaster nursing mental health. *Current Psychiatry Reports*. 17(14). doi:10.0007/s11920-0150548-2

Kuhls, D., Chestovich, P., Coule, P., Carrison, D., Chua, C., Wora-Urai, N., & Kanchanarin, T. (2017) Basic disaster life support (BDLS) training improves first responder confidence to face mass-casualty incidents in Thailand. *Prehospital and Disaster Medicine*. 32(5). 492-500. doi: 10.1017/S1049023X17006550

Labrague, L. J., Hammard. K., Gloe. D. S., McEnroe-Petitte, D. M., Fronda, D. C., Obeidat, A. C., Leocadio, M. C., . . . Mirafuentes, E. C. (2017) Disaster preparedness among nurses: a systematic review. *International Nursing Review*. 65(1). doi:10.1111/inr.12369

Marin, S. M., & Witt, R. R. (2015). Hospital nurses' competencies in disaster situations: A qualitative study in the south of brazil. *Prehospital and Disaster Medicine, 30*(6), 548-552. doi:1017/S1049023X1500521X

McCabe, O. L., Everly, G. S., Brown, L. M., Wendelboe, A. M., Hamid, N. H., Tallchief, V. L., & Links, J. M. (2014) Psychological first aid: A consensus-derived, empirically supported, competency-based training model. *American Public Health Association*. 104(4). 621-628. doi:10.2105/AJPH.2013.301219

Melnyk, B.M. & Fineout-Overholt, E. (2015). "Box 1.3: Rating system for the hierarchy of evidence for intervention/treatment questions" in *Evidence-based practice in nursing & healthcare: A guide to best practice (3rd ed.)* (pp. 11). Philadelphia, PA: Wolters Kluwer Health.

Melnyk, B.M. & Fineout-Overholt, E. (2015). "The Iowa Model of Evidence-Based Practice to Promote Quality Care" in *Evidence-based practice in nursing & healthcare: A guide to best practice (3rd ed.)* (pp.284). Philadelphia, PA: Wolters Kluwer Health.

Moran, K., Burson, R., & Conrad, D. (2017). *The Doctor of Nursing Practice Scholarly Project: A Framework for Success* (2nd ed.). Burlington, MA: Jones & Barlett Learning.

Murphy, J. P., Radestad, M., Kurland, L., Jirwe, M., Djalai, A,. & Ruter, A. (2019) Emergency department registered nurses' disaster medicine competencies. An exploratory study utilizing a modified Delphi technique. *International Emergency Nursing*. 43(1). 84-91. doi: j.ienj.2018.11.003

Nadworny, D. (2019) Position Statement: The role of the emergency nurses in emergency preparedness and response. *Emergency Nurses Association*. Retrieved From: https://www.ena.org/docs/default-source/resource-library/practice-resources/position-statements/allhazardspreparedness

Nesbitt. I. (2015) Mass casualties and major incidents. *Surgery (Oxford)*. 33(9). 410-412. doi: 10.1016/j.mpsur.2015.07.003

Park, H. Y., & Kim, J. S., (2017) Factors influencing disaster nursing core competencies of emergency nurses. *Applied Nursing Research*. 37. 1-5. doi 10.1016/j.apnr.2017.06.004

Razak, S., Hignett, S., & Barnes, J (2018) Emergency department response to chemical, biological, radiological, nuclear, and explosive events: A systematic review. *Prehospital and Disaster Medicine*. 33(5). 543-549. doi:10.1017/S1049023X18000900

Said, N. B., Chiang, V. C. L. (2019) The knowledge, skill competencies, and psychological preparedness of nurse for disaster: A systematic review. *International Emergency Nursing*. Retrieved from: doi:10.1016/j.ienj.2019.100806

Shipman, S. J., Stanton, M. P., Tomlinson, S., Olivet, L., Graves, A., McKnight, D., & Speck, P. M. (2016). Qualitative analysis of the lived experience of first-time nurse responders in disaster. *The Journal of Continuing Education in Nursing, 47*(2), 61-71. doi: 10.3928/00220124-20160120-06

Stanley, J., Chastain, A. R., Davies, K., Deeny, P., Etherington, C., Gebbie, K., Gilbert, C., . . . Woods, S. (2003) Educational competencies for registered nurses responding to mass casualty incidents. *Internal Nursing Coalition for Mass Casualty Education*.

Taskiran, G., & Baykal, U. (2019) Nurses' disaster preparedness and core competencies in Turkey: a descriptive correlational design. *International Nursing Review*. 66(2). doi:10.1111/inr.12501

Theodoros, P., Panayota, S., Petros, G., & Athena, K. (2015) Development, implementation and evaluation of a disaster training programme for nurses: A switching replication randomized controlled trial. *Nurse Education in Practice*. 15(1). 63-67. doi:10.1016/j.nepr.2014.02.001

The Office for Victims of Crime (2018) 2018 National Crime Victim's Rights Week Resource Guide: Crime and Victimization Fact Sheet. Retrieved from: https://ovc.ncjrs.gov/ncvrw2018/info_flyers/fact_sheets/2018NCVRW_MassCasualty_508_QC.pdf

Thobaity. A. I., Plummer. V., & Williams. B. (2017) What are the most common domains of the core competencies of disaster nursing? A scoping review. *International Emergency Nursing*. 31(1). 64-71. doi:10.1016/j.ienj.2016.10.003

World Health Organization and International Counsel of Nurses (2009). ICN Framework of Disaster Nursing Competencies. Retrieved from: http://www.wpro.who.int/hrh/documents/icn_framework.pdf

World Health Organization (2007) Mass Casualty Management Systems: Strategies and guidelines for building health sector capacity Retrieved from: https://www.who.int/hac/techguidance/MCM_guidelines_inside_final.pdf

Wisniewski, R., Dennik-Champion, G. & Peltier, J. W. (2004). Emergency Preparedness Competencies. *JONA: The Journal of Nursing Administration.* 34(10), 475-480.

Worrall, J. (2012) Are emergency care staff prepared for disaster? *Emergency Nurse*. 19(9). 31-37. Retrieved from: doi:10.77748/en2012.02.19.31.c89

Appendix A

Strength of Evidence Table

Article	**Study Purpose**	**Sample**	**Methods**	**Study Results**	**Level of Evidence**	**Study Limitations**	**Use as Evidence to Support Change**
Al-Maaitah, R., Conlan, L., Gebbie, K., Hutton, A., Langan, J. C., Loke, A. Y., McClelland, A., . . . Yamamoto, A. (2019) *International Council of Nurses Core Competencies in Disaster Nursing Version 2.0.* Geneva: International Council of Nurses. Retrieved from: https://www.icn.ch/sites/default/files/inline-files/ICN_Disaster-Comp-Report_WEB.pdf	The purpose of this guideline was to evaluate the previous version of the ICN Framework of Disaster Nursing Competencies and pose additions to the competencies	Systematic review of disaster competencies guidelines was conducted. A committee of over 150 international nurses along with three major international nursing groups review and validated the competencies	A committee of over 150 international nurses along with three major international nursing groups assisted in the final draft and revision of the competencies. This committee was responsible for evaluating literature, editing final competencies, and drafting the language for the competencies.	The ten previous domains of disaster nursing competencies were organized into eight domains in effort to create a more unified and common approach to preparedness among nurses. The eight domains of disaster nursing include preparation and planning, communication, incident command systems, safety and security, assessment, intervention, recovery, and law and ethics.	Level 5 evidence: systematic review of qualitative studies	Limitations: expert opinion	Yes, this is an international guideline on nursing disaster competencies

		developed by this guideline.		Competencies related to mental health were added in addition to prior competencies.			
Aluisio, A. R., Daniel, P., Grock, A., Freedman, J., Singh, A., Papanagniu, D., & Arquilla, B. (2016) Case-based learning outperformed simulation exercises in disaster preparedness education among nursing trainees in India: a randomized controlled trial. *Prehospital and Disaster Medicine*. 31(5). 516-523. DOI:10.1017/S1049023X16000789	The purpose of this study was to evaluate the effectiveness of case-based learning (CBL) verses simulation exercises (SE) in disaster triage preparedness knowledge attainment.	This RCT was performed during a disaster preparedness course in India (2014). 48 nursing trainees were randomly selected as the sample size.	Nurse trainees were randomly selected into three groups: didactic teaching (control group), CBL (group 1), and SE (group 2). Disaster triage education was identical. The groups performed crossover education after primary assessment to partake in alternative training and then were reassessed. Assessment of knowledge was performed by two standardized multiple-choice questionnaires.	CBL had significant increase in knowledge seen by test scores. SE did not significantly improve knowledge. CBL showed to be a superior disaster preparedness education method compared to SE.	Level 2 evidence: RCT	Limitations: Lack of blinding. There could be bias that exists due to lack of blinding. Knowledge assessment tools were not piloted in studies prior to utilization in this study.	Yes: this is an RCT with good evidence to suggest that CBL is an effective method of education for disaster triage.
Baack, S., & Alfred, D. (2013) Nurse's preparedness and perceived competence in	The purpose of this study was to evaluate	Nurses in rural community hospitals in	A 58-item disaster readiness questionnaire was created and	Results from this study found that the majority reported low confidence in their	Level 6 descriptive qualitati	Limitations:	Yes, this data allows us to understand the reasons

managing disasters. *Journal of Nursing Scholarship*. 45(3). 281-287. https://doi-org.ezproxy.liberty.edu/10.1111/jnu.12029	nurses perceived preparedness to respond to disaster events.	Texas were surveyed for this study. The total number of sample size was 620 nurses.	implemented to nursing staff. The questionnaire utilized a Likert score related to confidence, and willingness to respond in disaster related topics.	ability to respond to major disaster incidents. Prior disaster experience was a predictor found in disaster confidence. Level of motivation correlated to nurses perceived competence.	ve design.		driving nurses' lack of perceived disaster preparedness. We can then address and focus on improving this lack of confidence in disaster preparedness.
Curran-Sills, G., & Franc, J. M. (2017). A pilot study examining the speed and accuracy of triage for simulated disaster patients in an emergency department setting: Comparison of a computerized version of Canadian triage acuity scale (CTAS) and simple triage and rapid treatment (START) methods. *CJEM : Journal of the Canadian Association of Emergency Physicians, 19*(5), 364-371. doi:http://dx.doi.org.ezproxy.liberty.edu/10.1017/cem.2016.386	The purpose of this study was to compare triage methods and accuracy in a simulated mass casualty incident (MCI)	Convenience sample of 20 emergency nurses were selected for this study	Computerized versions of CTAS and START triage systems were used in this study. OF the 20 participants 10 were selected into each group CTAS or START. Each group was given nine simulated MCI and were evaluated on their time to triage and accuracy.	START triage was 105 seconds/patient faster compared to CTAS, but both had similar accuracy. This study concluded that choosing one method over the other is not justified by the findings. The use of either is justified.	Level 3 evidence: quasi-experimental study	Limitations: no randomization and no blinding of participants. Small sample size.	Yes: The findings from this study Support the use of START triage which is the method of MCI triage used by the organization I will be implementing my project.

Currie, J., Kourouche, S., Gordon, C., Jorm, C., & West, S. (2018) Mass casualty education for undergraduate nursing students in Australia. *Nurse Education in Practice*. 28. 156-162. https://doi.org/10.1016/j.nepr.2017.10.006	The purpose of this study was to include a mass casualty nursing educational program into Senior Bachelor nursing students in Australia.	The sample size for this study was 134 students within an undergraduate nursing program in Australia.	Students received mass casualty education for 13 weeks. The education included competencies based on the ICN and CENA. Students underwent a disaster simulation as a final aspect of their educational training in disaster	Majority of the students found the simulation to be positive in developing disaster skills, 93%. All students that were surveyed reported increase in critical thinking skills related to disaster nursing.	Level 6 descriptive design.	Limitations: no randomization of groups or control group.	Yes, this study demonstrates the importance for educational exposure of nurses to disaster competencies training.
Curtis, H. A., Trang, K., Chason, K. W., & Biddinger, P. D. (2018). Video-based learning vs traditional lecture for instructing emergency medicine residents in disaster medicine principles of mass triage, decontamination, and personal protective equipment. *Prehospital and Disaster Medicine*, *33*(1), 7-12. doi:http://dx.doi.org.ezproxy.liberty.edu/10.1017/S1049023X1700718X	The purpose of this study was to compare video-based learning with traditional lecture in the education of disaster medicine core competencies	Participants included 26 residents, randomly selected.	Participants were randomly selected into two groups video-based learning 0r traditional lecture. Education included mass triage, decontamination, and personal protective equipment (PPE). A knowledge quiz, Likert scale to measure comfort, and a practical exercise were	There was no significant difference between groups in knowledge improvement or comfort score improvement. Practical assessment the VBL group did outperform in PPE and decontamination.	Level 2 evidence: RCT	Limitations: The participants were selected from a single university hospital which could affect generalizability. Small Sample size	Yes: The evidence from this study helps support education strategies that may be used in disaster education

			performed at the end of the education to measure learning.				
Georgino, M. M., Kress, T., Alexander, S., & Beach, M. (2015) Emergency preparedness education for nurses: core competency familiarity measured utilizing an adapted emergency preparedness information questionnaire. 22(5). 240-247. doi:10.1097/JTN.0000000000000148	The purpose of this study was to measure improvement in trauma nurse's familiarity of disaster core competencies. Nurses were evaluated for improvement in familiarity following educational sessions	The sample size consisted of the total 63 nurses that completed the intervention over a 5-month period	The design was a descriptive study that consisted of education sessions with pre- and post-surveys. This study utilized an edited version of the emergency preparedness information Questionnaire	The study indicated that the disaster education demonstrated significant improvement in all 8 disaster competencies.	Level 6: descriptive design	There are multiple limitations in this study, including: the questionnaire used was a subjective test, limitation of time between pre-and post-test, And a adapted version of the EPIQ questionnaire was utilized compared the original questionn	Yes, this evidence does provide good support in favor of methods to improve and evaluate nurses' familiarity with disaster core competencies

						aire which may have affected the validity of the questionnaire.	
Gowing, J. R., Wlaker, K. N., Elmer, S. L., & Cummings, E. A. (2017) Disaster preparedness among health professionals and support staff: What is effective? An integrative literature review. *Prehospital and Disaster Medicine*. 32(3). 321-328. DOI:10.1017/S1049023X1700019X	The purpose of this study was to identify current knowledge and gaps in disaster preparedness among health care professionals and support staff.	Major health databases were utilized using keyword search phases. 36 studies were included in this review.	Mixed-methods appraisal tool was utilized to perform an integrative literature review of the research pertaining to disaster preparedness.	Main themes found included: lack of preparedness among health professionals and support staff, lack of consensus for disaster preparedness methods, importance of inclusion of interdisciplinary teams, and development of competencies that are validated along with validated tools to measure competency. This review of literature found that in addition to these main themes, preparedness activities of any type lead to improvement of knowledge, skills, and attitudes related to disaster preparedness.	Level 5 evidence: systematic review of descriptive studies	Limitations include: Most articles reviewed used convenience sampling for quantitative studies. This design lack generalizability.	Yes: information from discovered from this study help identify areas of knowledge and gaps related to disaster preparedness among health care professionals.

Hugelius, K., & Adolfsson, A. (2019) The HOPE model for disaster nursing-A systematic literature review. *International Emergency Nursing*. 45. 1-9. https://doi.org/10.1016/j.ienj.2019.03.007	The purpose of this study was to review the concepts of disaster nursing, and review the core elements for the HOPE model of nursing disaster response	A systematic literature review of publication that were peer-reviewed. Primary data bases were: CINAHL, Medline, and Psych INFO	Thematic synthesis of literature collected through a systematic review was conducted. Disaster nursing was the theme of the literature review.	Through analysis of the content related to disaster nursing essence a model for disaster nursing was created. An Acronym named the HOPE model, has four main core values and goals for disaster nursing that include: holistic health assessment and promotion, organization and management of immediate response, professional adaption, endurance and recovery.	Level 5 evidence: systematic review of mainly qualitative studies	Limitations: only applies to the response phase of disaster nursing, mainly qualitative literature.	Yes, this literature review provides thematic synthesis of disaster response nursing competencies.
Hutton, A., Veenema, T. G., & Gebbie, K. (2016) Review of the International council of nurses (ICN) framework of disaster nursing competencies. *Prehospital and Disaster Medicine*. 31(6). 680-683. DOI:10.1017/S1049023X1600100X	The purpose of this study was to review the use of the ICN Framework of Disaster Nursing Competencies.	A committee invited 35 disaster/emergency groups with nurses that have likely responded to disaster, to complete a survey. 20 groups responded to the survey	A committee was developed by the ICN and World Association for Disaster and Emergency Medicine was (WADEM) to evaluate the ICN Framework of Disaster Nursing Competencies. Nursing and emergency groups	The majority agreed that they know or and use the ICN Framework of Diester Nursing Competencies for educational purposes. The competencies set by the ICN are held in high esteem, but respondent believe that psychosocial concerns could be addressed	Level 6 evidence: qualitative study.	Limitations: Small sample size. I larger group of nurses should be used in future studies.	Yes: This research provides evidence that the ICN Framework of Disaster Competencies is foundational education for disaster nursing.

			were sent a survey to evaluate the ICN competencies for disaster.	more in future competencies.			
Khan, K (2018) Tabletop exercise on mass casualty incident triage, does it work? *Health Science Journal*. 12(3). 1-6. http://ezproxy.liberty.edu/login?url=https://search-proquest-com.ezproxy.liberty.edu/docview/2101266788?accountid=12085	The purpose of this study was to evaluate if tabletop exercises for MCI triage education improved knowledge and skills in disaster triage among medical staff.	Sample of medical and nursing staff from a hospital at Doha, Qatar were selected for the study	Medical and nursing staff were randomly selected into either the intervention group (tabletop exercise) or the control group (written paper instructions). After education both groups were asked to triage 20 standardized disaster triage cases and were evaluated on accuracy and time to triage.	Those that participate in the tabletop exercise has a greater accuracy and shorter tome to triage compared to the control group.	Level 3 evidence: quasi-experimental study	Limitations: This study did not utilize blinding and thus bias can occur. All participates were from one hospital, reducing generalizability of the study.	Yes: This study provides evidence that validates tabletop exercise for disaster triage education.
King, R. K., Burkle, F. M., Walsh, L. E., North, C. S. (2015) Competencies for disaster nursing mental health. *Current Psychiatry Reports*. 17(14).	The purpose of this study was to identify specific competencies pertaining to disaster	A systematic literature review peer-reviewed research was conducted on primary data bases:	Keywords utilized in the systematic review of literature included: competencies, disaster, emergency, preparedness,	Of the 16 relevant articles discovered through the methodology described, eight competency sets had mental health as the primary focus and eight	Level 5 evidence: systematic review of descript	Limitations: mainly qualitative literature. Lack of RCTs	Yes: This study provides the basis for disaster competencies related to mental health. These

doi:10.0007/s11920-0150548-2	mental health and provide guidance in the developing of disaster mental health curricula for healthcare professional.	EBSCO, Medline, and Psych INFO, and Google Scholar. A total of 16 competency sets were discovered pertaining to disaster and mental health competencies.	medicine, health, behavioral, psychological, and psychosocial. Research was condensed to literature containing competency sets of review s of competencies that addressed mental health, psychological, psychosocial, and behavioral health.	competency sets did not have mental health as the primary focus. Essential competencies related to mental health found within disaster competency literature included: knowledge of psychological sequelae following disasters, the assessment and management of psychological issues, the ability of responders to recognize and address their psychological needs.	ive studies		competencies are important to MCI response education.
Labrague, L. J., Hammard. K., Gloe. D. S., McEnroe-Petitte, D. M., Fronda, D. C., Obeidat, A. C., Leocadio, M. C., . . . Mirafuentes, E. C. (2017) Disaster preparedness among nurses: a systematic review. *International Nursing Review*. 65(1). doi:10.1111/inr.12369	The purpose of this study was to establish the consensus of nurses' disaster preparedness	17 articles were selected for this study through a systematic review of literature of scientific databases.	Systematic review of per-reviewed publication on nurse disaster preparedness conducted from 2006-2016.	It is widely accepted that nurses are insufficiently prepared or lack confidence in response to disaster. Factors that increase disaster preparedness among nurses are reported to be previous experience in disaster response and training related to disaster.	Level 5 evidence: systematic review of descriptive studies	All the articles included in the study were published in English only.	Yes: This study yielded valuable information that supports implementation of education and policy to address disaster preparedness among nurses.
Marin, S. M., & Witt, R. R. (2015). Hospital nurses' competencies in disaster	The purpose of this study was to	A group of eleven nurses voluntarily	Focus groups were created to collect data. Three focus	Seventeen competencies were validated by the focus	Level 6 qualitative	Limitations: small sample	Yes: The competencies that were

situations: A qualitative study in the south of brazil. *Prehospital and Disaster Medicine, 30*(6), 548-552. doi:http://dx.doi.org.ezproxy.liberty.edu/10.1017/S1049023X1500521X	identify nurses' disaster situations competencies	nominated to join the focus group, had to have two years of experience and interest in disaster topics.	group meeting were held for hospital nurses. Competencies were generated through data thematic analysis.	group. The competencies originated from the WHO disaster competencies and were organized according to domain	descriptive study.	size, participants were selected from one hospital. Lacks generalizability.	developed though this study can contribute to disaster preparedness education for nurses.
McCabe, O. L., Everly, G. S., Brown, L. M., Wendelboe, A. M., Hamid, N. H., Tallchief, V. L., & Links, J. M. (2014) Psychological first aid: A consensus-derived, empirically supported, competency-based training model. *American Public Health Association*. 104(4). 621-628. doi:10.2105/AJPH.2013.301219	The purpose of this study was to describe and discuss a competency-based model of psychological first aid training, the approach utilized to create the competency set, summarize the competency domains, and discuss strategies for disseminatio	A systematic literature review of primary - source data from psychological first aid training research studies was conducted along with review of peer-reviewed literature review of data bases including: Medline, PsycINFO, Google Scholar, and	A mixed methods approach to evaluation of the review literature was performed to yield data related to the core competency domains of psychological first aid. An advisory group consisting of committees from the Centers for Disease Control (CDC) and the Association of Schools of public health (ASPH) examined the competencies established by this model.	The psychological first aid model resulted in the creation of a consensus-based, empirically supported competency guideline for psychological aid, consisting of the following competency domains: (1) initial contact, rapport building, and stabilization, (2) brief assessment and triage, (3) intervention, (4) triage, (5) referral, liaison, and advocacy; and (6) self-awareness and self-care	Level 5 evidence: systematic review of descriptive studies	Limitations: This framework established the competencies of psychological first aid but dies not provide the process for training utilizing this model	Yes; this competency-based psychological aid model affirms the importance of psychological care in MCIs

	n of this model in professional healthcare practice.	Thomas Reuters					
Murphy, J. P., Radestad, M., Kurland, L., Jirwe, M., Djalai, A,. & Ruter, A. (2019) Emergency department registered nurses' disaster medicine competencies. An exploratory study utilizing a modified Delphi technique. *International Emergency Nursing*. 43(1). 84-91. doi: j.ienj.2018.11.003	The purpose of this study was to identify disaster preparedness competencies that are essential to emergency nurses.	40 experts of "specialists within their specific field" emergency or disaster, were selected for this study	The Delphi technique was utilized for this study to collect expert opinion and develop core disaster competencies for emergency nurses. Experts rated competencies and those that were give scores of 4 or higher were rated as essential.	Consensus was reach on 62 core competencies for disaster preparedness. Disaster preparedness plan and decision making were deemed essential competencies for nurses responding to disaster in the ED.	This study utilized level 7 evidence. (expert opinion)	Limitations: Some of the experts in the study knew each other, which could affect results from this study.	Yes: although the level of evidence for this study is not strong, the information gained from what experts deem as essential disaster competencies for nurses is valuable.
Park, H. Y., & Kim, J. S., (2017) Factors influencing disaster nursing core competencies of emergency nurses. *Applied Nursing Research*. 37. 1-5. doi 10.1016/j.apnr.2017.06.004	The purpose of this study was to identify in emergency nurses' factors that influence disaster core competencies	A convenience sample of 231 nurses working in the emergency department from 12 hospitals in South Korea.	The method for this study in which data was collected was through a descriptive cross-sectional study. Questionnaire revealed nurses nursing core competencies, knowledge, attitude, and experience in	The variable that proved to be the greatest positive influences on nurses' disaster core competencies were disaster related experience followed by disaster related knowledge. ($p<0.0001$).	Level 6 evidence cross-sectional descriptive study	Limitations include sample of nurses. It was found that wage and position have effect on core	Yes, I would use this evidence to help support change in practice. This evidence although it is descriptive, helps support influencing factors contributing to

			relation to disaster events.			competencies of the nurses selected	nurse disaster core competencies.
Razak, S., Hignett, S., & Barnes, J (2018) Emergency department response to chemical, biological, radiological, nuclear, and explosive events: A systematic review. *Prehospital and Disaster Medicine*. 33(5). 543-549. DOI:10.1017/S1049023X18000900	The purpose of this study was to identify studies that involved CBRNEs events and the emergency department. The goal was to discover challenges related to detection, decontamination, and diagnosis of CBRNE response in the ED.	67 studies/ texts were analyzed in a systematic review of literature of CBRNE events focused on the ED.	The systematic review of literature utilizing a Mixed Methods Appraisal Tool (MMAT). Data was grouped into themes that included: preparedness, response, decontamination, and personal protective equipment (PPE).	Review of literature suggests that response and preparation to CBRNE by the ED should be considered at the organizational level, technological level, and individual level. The focus was on improving detection and diagnosis of CBRNE exposure. Evidence showed a concern for knowledge related to CBRNE response.	Level 5 evidence: systematic review of descriptive studies	Limitations include lack of generalizability	Yes: This systematic review of literature shows the consensus of CBRNE knowledge and attitude towards response to CBRNE disaster events and guides evidence-based education related to disaster response to these events.
Said, N. B., Chiang, V. C. L. (2019) The knowledge, skill competencies, and psychological preparedness of nurse for	The purpose of this study was to evaluate the consensus	Five databases were utilized in the systematic	A Mixed Methods Appraisal Tool (MMAT) was utilized in the systematic review	This systematic review of disaster nursing literature revealed common themes such as: a continued lack of	Level 5 evidence: systematic	Limitations include lack of RCT	Yes: This systematic review of literature relieved the

disaster: A systematic review. *International Emergency Nursing*. Retrieved from: https://doi.org/10.1016/j.ienj.2019.100806	of literature pertaining to nursing disaster preparedness, knowledge, skill competencies, and psychological preparedness.	review of literature: PubMed, CINAHL, Scopus, Medline, and Science Direct. Twelve studies met inclusion criteria for this study.	of literature. Of the included articles common themes to disaster nursing were identified and synthesized.	disaster preparedness among nurses, a need for improved disaster preparedness education, enhancement of psychological disaster preparedness, and improving teaching methods of disaster education to include high-fidelity simulation.	review of descriptive studies	examining nursing disaster training and psychological preparedness. Articles were limited to English language only. The literature review did not include guidelines.	consensus of knowledge pertaining to the knowledge, skill competencies, and psychological preparedness of nurses for disaster
Shipman, S. J., Stanton, M. P., Tomlinson, S., Olivet, L., Graves, A., McKnight, D., & Speck, P. M. (2016). Qualitative analysis of the lived experience of first-time nurse responders in disaster. *The Journal of Continuing Education in Nursing, 47*(2), 61-71. doi:http://dx.doi.org.ezpro	The purpose of this study was to analyze and identify the thematic knowledge and skills that are essential for nurses to respond to	Ten participants were selected from the southeastern region of the United States. All participants were first time responders in	The live experiences from nurses that have responded to disaster situation for the first time was analyzed through a narrative inquiry. Phenomenological analysis was used	The themes discovered through this study included: lack of prior volunteerism disaster response, prior mass casualty exercises did not prepare them for actual response to disaster, and specific skills that are core to disaster response.	Level 7 descriptive expert opinion	Limitations: Participants were selected from the same region. Small sample size.	Yes: This study presents the significant gaps that still exist in undergraduate emergency preparedness curriculum. The live experiences of first-time

xy.liberty.edu/10.3928/00220124-20160120-06	disaster. Secondarily the purpose was to help develop themes for education focus in disaster preparedness.	a disaster event.	to help identify themes.				responders to disaster help establish important themes for disaster education.
Stanley, J., Chastain, A. R., Davies, K., Deeny, P., Etherington, C., Gebbie, K., Gilbert, C., . . . Woods, S. (2003) Educational competencies for registered nurses responding to mass casualty incidents. *Internal Nursing Coalition for Mass Casualty Education*.	The purpose of this study was to address the need of mass casualty incident (MCI) preparedness among nurse though development of a consensus-based, validated competencies guideline for all entry-level nurses.	Systematic review of MCI competencies guidelines was conducted utilized. A validation panel of 46 nominated individuals from several healthcare agencies and universities review and validated the competencies developed by this guideline.	This competency guideline was developed from a three-phase step method. In the first phase, several MCI competencies guidelines were reviewed. In the second phase a committee was created to produce a consensus on the competencies that would be utilized for the guideline. In the third stage a validated review panel of 46 representatives of nursing educators, regulation,	The MCI core nursing competencies that were created and validated relate to critical thinking, assessment, technical skills, and communication.	Level 5 evidence: systematic review of qualitative studies	Limitations: expert opinion	Yes, this is a national guideline on nursing core mass casualty competencies

			accreditation, and practice setting reviews and evaluated the competencies set for by this guideline.				
Taskiran, G., & Baykal, U. (2019) Nurses' disaster preparedness and core competencies in Turkey: a descriptive correlational design. *International Nursing Review*. 66(2). https://doi-org.ezproxy.liberty.edu/10.1111/inr.12501	The purpose of this study was to identify nurses' perception of their confidence in disaster preparedness and core competency knowledge	A convenience sample of 406 nurses from a university hospital in Turkey, completed the study.	Descriptive correlational design. The participates were evaluated in two areas "perception of disaster preparedness" and "perception of disaster core competencies"	Results showed gaps in disaster preparedness and disaster core competencies among nurses. "critical thinking skills" scored the lowest. Better perception was related to disaster experience, age, and professional experience,	Level 6 evidence: descriptive study	Study was performed in one hospital so limitation could include lack of generalizability of results.	Yes: understanding nurse's perception of disaster preparedness and competencies helps identify the gaps in disaster knowledge and education. From this information we can improve disaster management and education.
Theodoros, P., Panayota, S., Petros, G., & Athena, K. (2015) Development, implementation and evaluation of a disaster training programme for	The purpose of this study was to develop, implement, and evaluate	A randomized selected of 207 acute care nurses from two tertiary metropolitan	The method of this study was to initially assess the knowledge of disaster care baseline. Using a	The results found that the intervention improved disaster knowledge and confidence among nurses. There was a	Level 2 evidence with a randomized	Limitations include: the training program	Yes, I would use this evidence to support change in practice as this is high

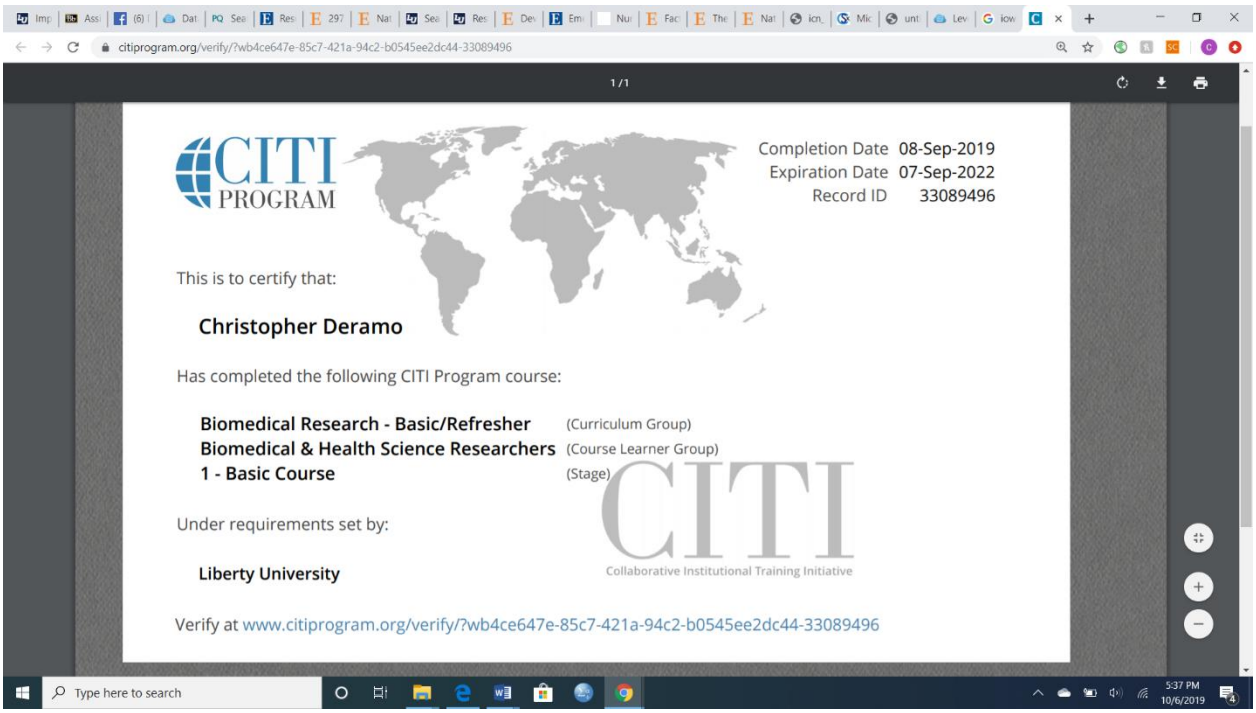
nurses: A switching replication randomized controlled trial. *Nurse Education in Practice*. 15(1). 63-67. doi:10.1016/j.nepr.2014.02.001	a disaster educational program for nurses.	hospitals were randomly assigned into either the intervention group or control group.	randomized control trial with a switching replication design, with both groups experiencing the control and intervention. The intervention was nurse disaster education course. Each group received parallel pre and post-tests.	significant increase in mean knowledge.	control trial.	is not reproducable, as it was developed according to the Greek National emergency plan, so implementation into other countries would be difficult.	level practice. Similar intervention could be created for U.S. emergency plans.
Thobaity. A.I., Plummer. V., & Williams. B. (2017) What are the most common domains of the core competencies of disaster nursing? A scoping review. *International Emergency Nursing*. 31(1). 64-71. https://doi.org/10.1016/j.ienj.2016.10.003	The purpose of this study was to identify the most common core competencies related to disaster nursing.	Twelve relevant and eligible articles were selected to review. These articles were selected because they listed core competency disaster domains.	A scoping review was utilized reviewing six databases: Cumulative Index to Nursing and Allied Health Literature, Ovid, Science Direct, ProQuest, Scopus, and Education Resource Information Center.	This study found that of the most common domains related to disaster nursing, were related to communication, planning, decontamination, safety, incident command systems, and ethics.	Level 5 evidence: systematic review of descriptive studies	Review includes only English written studies. Focus was on methodology not quality.	Yes: The knowledge and understanding of the most common core competencies, will strengthen disaster preparedness education.

			The Joanna Briggs Institute Methodology was conducted to review literature.				
Wisniewski, R., Dennik-Champion, G. & Peltier, J. W. (2004). Emergency Preparedness Competencies. *JONA: The Journal of Nursing Administration.* 34(10), 475-480. Retrieved from: https://oce-ovid-com.ezproxy.liberty.edu/article/00005110-200410000-00009/HTML	The purpose of this study was to assess nurses' self-perceived familiarity in response to emergency preparedness.	877 registered nurses in Wisconsin participate in the online questionnaire evaluation of emergency preparedness response familiarity.	The EPIQ, a 44 knowledge-based item questionnaire created to evaluate nurses self-perceived emergency preparedness competency familiarity, was placed online and communicated through an online health network that consisted of health departments, hospitals, clinics, emergency rooms, and other agencies from which nurses responded to the questionnaire.	The study results from the EPIQ implementation revealed high internal reliability. Overall familiarity with emergency preparedness and MCI core competences was demonstrated to be low among nurses with an overall EPIQ score of 2.29. The least familiarity competencies demonstrated by the respondents were related to communication, epidemiology, and clinical decision making .	Level 6 evidence: descriptive study	Lack of randomization, and non-generalizability remain limitations from this study.	Yes, This study was the first study to evaluate the EPIQ and was able to prove it is a reliable tool for emergency preparedness familiarity evaluation among nurses.
Worrall, J. (2012) Are emergency care staff prepared for disaster? *Emergency Nurse*. 19(9). 31-37. Retrieved from:	The purpose of this study was to pilot the EPIQ in a MIU unit	41 participants were selected from this specific	The participants were selected through convenience sampling without	Results from this study indicated a statically significant differences in the mean familiarity score pre- and post-	Level 3 evidence: quasi-experim	Limitations included: small sample	Yes, this study demonstrates the usefulness of the EPIQ as a tool to

DOI: 10.77748/en2012.02.19.31.c8943	to assess the effectiveness in determining nurses' and healthcare assistants' level of familiarity with emergency preparedness.	hospital unit. Of the 41 participants, 33 were nurses.	randomization. Participants completed EPIQ evaluation of emergency preparedness familiarity pre- and post-educational intervention pertaining to emergency response.	intervention utilizing the EPIQ. Use of the EPIQ to assess nurses' self-reported disaster preparedness was demonstrated to be strong as an instrument for familiarity evaluation	ental study	size, no demographic data, and the MIU does not represent all nursing units in the hospital,	evaluate nursing emergency preparedness response familiarity.

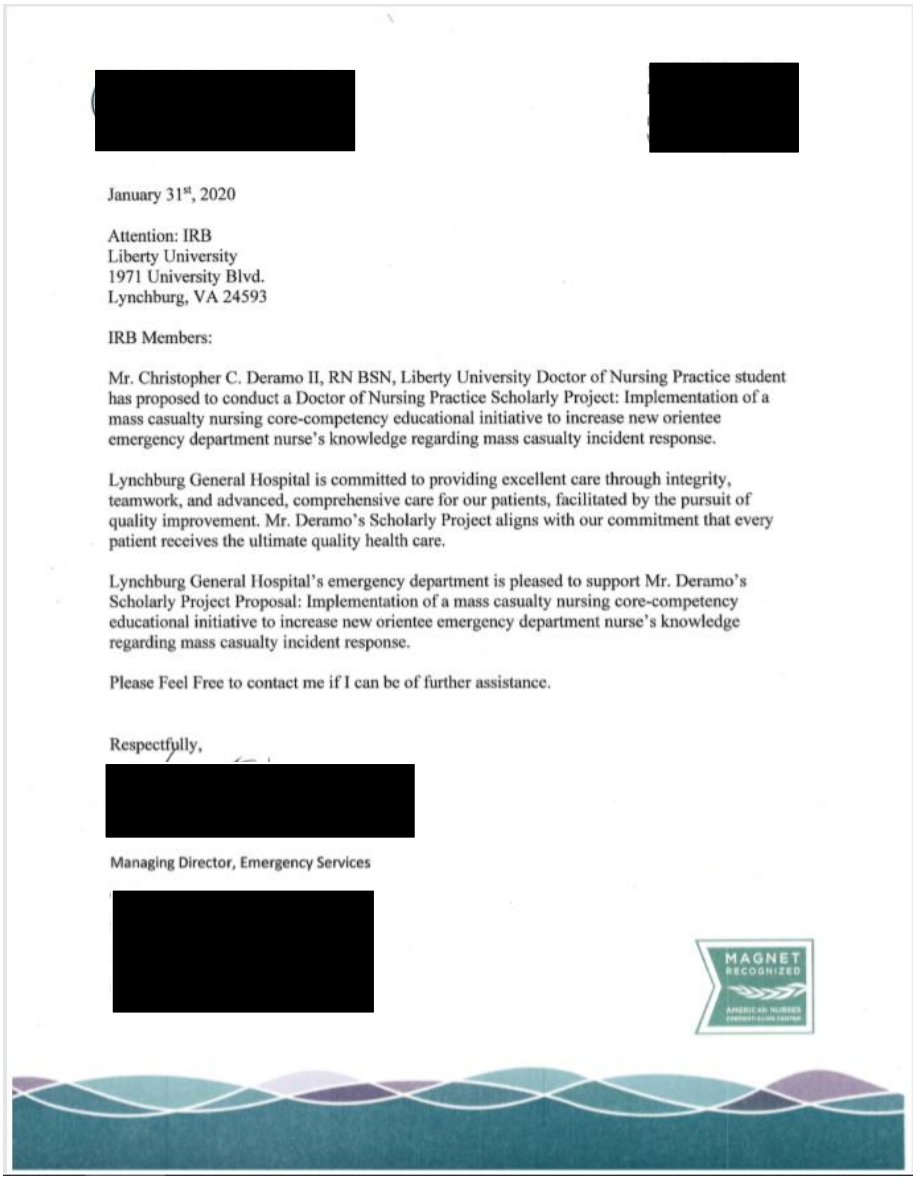
Appendix B

CITI Certificate



Appendix C

Letter of Support from the Emergency Department Director



[redacted]

[redacted]

January 31st, 2020

Attention: IRB
Liberty University
1971 University Blvd.
Lynchburg, VA 24593

IRB Members:

Mr. Christopher C. Deramo II, RN BSN, Liberty University Doctor of Nursing Practice student has proposed to conduct a Doctor of Nursing Practice Scholarly Project: Implementation of a mass casualty nursing core-competency educational initiative to increase new orientee emergency department nurse's knowledge regarding mass casualty incident response.

Lynchburg General Hospital is committed to providing excellent care through integrity, teamwork, and advanced, comprehensive care for our patients, facilitated by the pursuit of quality improvement. Mr. Deramo's Scholarly Project aligns with our commitment that every patient receives the ultimate quality health care.

Lynchburg General Hospital's emergency department is pleased to support Mr. Deramo's Scholarly Project Proposal: Implementation of a mass casualty nursing core-competency educational initiative to increase new orientee emergency department nurse's knowledge regarding mass casualty incident response.

Please Feel Free to contact me if I can be of further assistance.

Respectfully,

[redacted]

Managing Director, Emergency Services

[redacted]

MAGNET RECOGNIZED
AMERICAN NURSES CREDENTIALING CENTER

Appendix D

Permission to Use the Iowa Model & the Iowa Model Schematic

[redacted]

Sun 9/8/2019 4:10 PM
To: Deramo, Christopher

You have permission, as requested today, to review and/or reproduce the *Evidence-Based Practice in Action* tools. Click the link below to open.

Copyright is retained by University of Iowa Hospitals and Clinics. **Permission is not granted for placing on the internet. Permission is granted for use within your organization on a password protected internal website.**

Please contact [redacted] with questions.

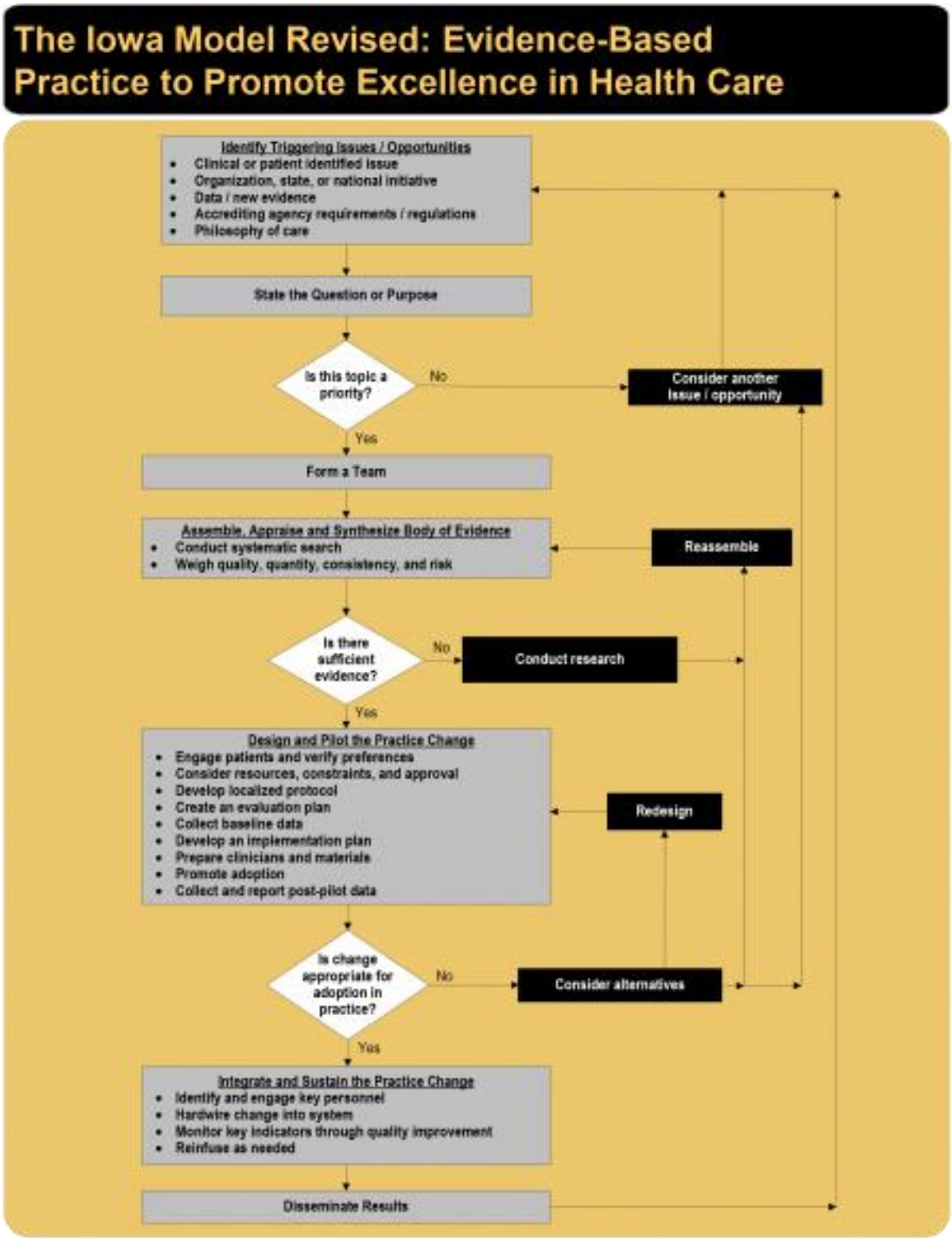
Citation: Cullen, L., Hanrahan, K., Farrington, M., DeBerg, J., Tucker, S., & Kleiber, C. (2018). *Evidence-based practice in action: Comprehensive strategies, tools, and tips from the University of Iowa Hospitals and Clinics*. Indianapolis, IN: Sigma Theta Tau Internation.

Tool 8.1 Selecting Implementation Strategies for EBP.docx
Tool 8.2 Collecting Pilot Process Issues.docx

Reply | Forward

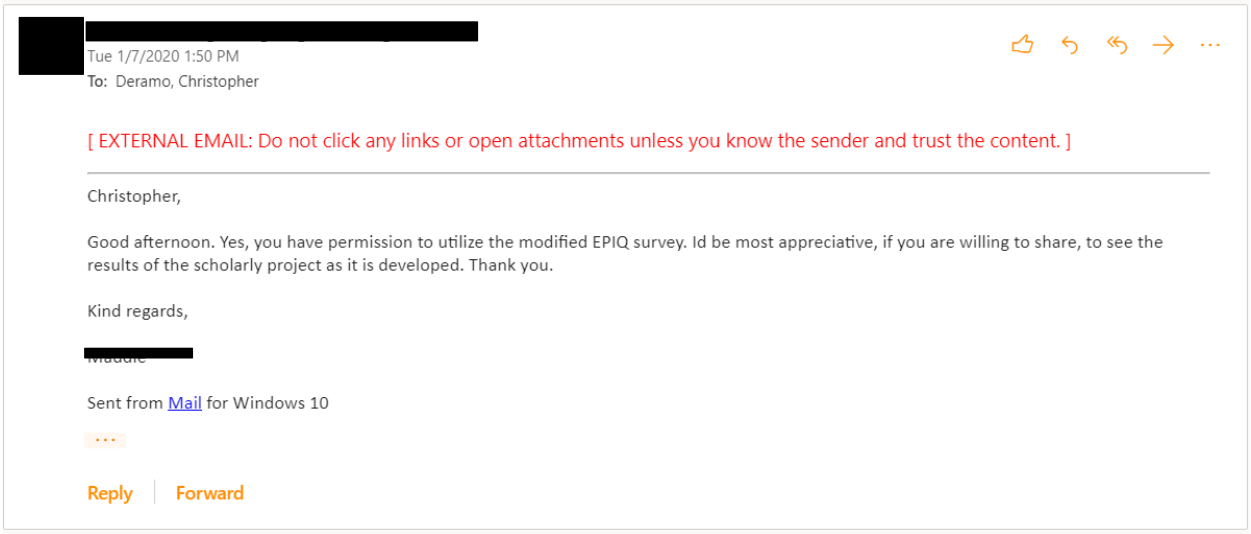
Appendix E

The Iowa Model Schematic



Appendix F

Permission to Use the Adapted Emergency Preparedness Information Questionnaire (EPIQ)



[redacted]
Tue 1/7/2020 1:50 PM
To: Deramo, Christopher

[EXTERNAL EMAIL: Do not click any links or open attachments unless you know the sender and trust the content.]

Christopher,

Good afternoon. Yes, you have permission to utilize the modified EPIQ survey. Id be most appreciative, if you are willing to share, to see the results of the scholarly project as it is developed. Thank you.

Kind regards,

[redacted]

Sent from Mail for Windows 10

Reply | Forward

Appendix G

Permission to Publish the Adapted Emergency Preparedness Information Questionnaire (EPIQ)

[redacted]
Thu 8/6/2020 4:39 PM
To: Deramo, Christopher

[EXTERNAL EMAIL: Do not click any links or open attachments unless you know the sender and trust the content.]

Hi Chris,
You have permission to use the adapted survey from the 2015 JTN article: Emergency Preparedness Education for Nurses: Core Competency Familiarity Measured Utilizing an Adapted Emergency Preparedness Information Questionnaire for your project.

My best to you.

Kind Regards, [redacted]

[redacted]
Editor in Chief
Journal of Trauma Nursing
[redacted]

DC Deramo, Christopher
Thu 8/6/2020 9:11 PM
To: [redacted]

Hello [redacted]
Just for clarification, as a requirement of the completion of my degree, the work would be published in my university institutional repository. I am also seeking permission to publish this tool in my scholarly project.
Thank you again for your time and consideration! and thank you for extending to me the permission to utilize the adapted EPIQ! from the 2015 JTN article: Emergency Preparedness Education for Nurses: Core Competency Familiarity Measured Utilizing an Adapted Emergency Preparedness Information Questionnaire.

Sincerely,
Chris Deramo

[redacted]
Fri 8/7/2020 8:18 AM
To: Deramo, Christopher

Hi Chris,
As long as you reference the material appropriately, there is no problem.

Regards, [redacted]

[redacted]
Editor in Chief
Journal of Trauma Nursing
[redacted]

Appendix H

Adapted Emergency Preparedness Information Questionnaire (EPIQ)

Pre-Questionnaire (Journal of Trauma Nursing ©)

TABLE 1 Eighteen-Question Adapted Emergency Preparedness Information Questionnaire (EPIQ)[a]

Unique identifier (last 5 digits of your social security number [SSN], or 5 letters and numbers of your choosing):					
Please circle the number of your level of familiarity with the following topics before AND/OR after educational program and table top exercise.					
Key:					
1. I have never heard of this topic before.					
2. I have heard the terminology but have no knowledge of this information.					
3. I know the terminology but have limited knowledge of this topic.					
4. I am familiar with this topic but not extremely proficient in all subject matter.					
5. I am very familiar with this topic; I am an expert in proficiency on this topic.					
Topic	**Level of Familiarity**				
I. Triage and basic first aid					
Q1. Performance of a rapid physical and mental assessment	1	2	3	4	5
Q2. Assisting with triage (START model)	1	2	3	4	5
Q3. Basic first aid in a large-scale emergency event	1	2	3	4	5
II. Biological agent detection					
Q4. Recognition of relevant signs and symptoms	1	2	3	4	5
Q5. Modes of transmission	1	2	3	4	5
Q6. Appropriate antidote and prophylactic medicine	1	2	3	4	5
Q7. Possible adverse reactions/complications	1	2	3	4	5
Q8. Signs/symptoms of exposure to different biological agents	1	2	3	4	5
III. Accessing critical resources and reporting					
Q9. When to report an unusual set of symptoms to the local and state health departments	1	2	3	4	5
IV. The Incident Command System (ICS)					
Q10. Knowledge of an Emergency Operation Plan (EOP)	1	2	3	4	5
Q11. Processes of the ICS	1	2	3	4	5
Q12. Agency preparedness information	1	2	3	4	5
Q13. The content of the EOP at hospital	1	2	3	4	5
V. Isolation, quarantine, and decontamination					
Q14. Isolation procedures for persons exposed to biological or chemical agents	1	2	3	4	5
VI. Psychological issues					
Q15. Signs/symptoms of posttraumatic stress following a disaster	1	2	3	4	5
Q16. Appropriate psychosocial needs/resources for victims	1	2	3	4	5
VII. Epidemiology and clinical decision making					
Q17. Ability to discern and treat persons with comorbidities whom are exposed to chemical agents, biological agents and/or radiation.	1	2	3	4	5
VIII. Communication and connectivity					
Q18. Procedures for communicating critical patient information for transporting patients during a disaster transporting	1	2	3	4	5

[a]*Adapted with permission by Gina Dennik-Champion, MSN, RN, MSHA, and James W. Pellier, PhD.*

Copyright © 2015 Society of Trauma Nurses. Unauthorized reproduction of this article is prohibited.

Pre-Questionnaire Contd.

Gender: Male___ Female ___
Years of experience as a Registered Nurse (RN) _____
Have you had any experience in responding to a mass casualty incident (MCI) event?

Yes___ No___ (if you answered yes, describe the event you responded to)

_____

_____

Have you had any formal mass casualty incident (MCI) education or training within the last year?

Yes___ No__ (if you answered yes, what was the education or training you participated in?)

_____

_____

Describe your level of confidence in your ability to effectively respond in an MCI event on a scale of one to five, with one (very low) and five (very high)

Key:

1. I have a very low level of confidence in my ability to effectively respond in a MCI event.
2. I have a low level of confidence in my ability to effectively respond in a MCI event.
3. I have moderate level of confidence in my ability to effectively respond in a MCI event.
4. I have a high level of confidence in my ability to effectively respond in a MCI event.
5. I have a very high level of confidence in my ability to effectively respond in a MCI event.

__Please circle your level of confidence ___

1 2 3 4 5

Appendix I

Adapted Emergency Preparedness Information Questionnaire (EPIQ)

Post-Questionnaire (Journal of Trauma Nursing ©)

TABLE 1 Eighteen-Question Adapted Emergency Preparedness Information Questionnaire (EPIQ)[a]

Unique identifier (last 5 digits of your social security number [SSN], or 5 letters and numbers of your choosing):					
Please circle the number of your level of familiarity with the following topics before AND/OR after educational program and table top exercise.					
Key:					
1. I have never heard of this topic before.					
2. I have heard the terminology but have no knowledge of this information.					
3. I know the terminology but have limited knowledge of this topic.					
4. I am familiar with this topic but not extremely proficient in all subject matter.					
5. I am very familiar with this topic; I am an expert in proficiency on this topic.					
Topic	**Level of Familiarity**				
I. Triage and basic first aid					
Q1. Performance of a rapid physical and mental assessment	1	2	3	4	5
Q2. Assisting with triage (START model)	1	2	3	4	5
Q3. Basic first aid in a large-scale emergency event	1	2	3	4	5
II. Biological agent detection					
Q4. Recognition of relevant signs and symptoms	1	2	3	4	5
Q5. Modes of transmission	1	2	3	4	5
Q6. Appropriate antidote and prophylactic medicine	1	2	3	4	5
Q7. Possible adverse reactions/complications	1	2	3	4	5
Q8. Signs/symptoms of exposure to different biological agents	1	2	3	4	5
III. Accessing critical resources and reporting					
Q9. When to report an unusual set of symptoms to the local and state health departments	1	2	3	4	5
IV. The Incident Command System (ICS)					
Q10. Knowledge of an Emergency Operation Plan (EOP)	1	2	3	4	5
Q11. Processes of the ICS	1	2	3	4	5
Q12. Agency preparedness information	1	2	3	4	5
Q13. The content of the EOP at hospital	1	2	3	4	5
V. Isolation, quarantine, and decontamination					
Q14. Isolation procedures for persons exposed to biological or chemical agents	1	2	3	4	5

TABLE 2 Posttest Adapted EPIQ, Additional 2 Questions

Please answer the following questions if this is a posttest survey:				
1. This course improved my knowledge regarding emergency preparedness and disaster response:				
Strongly disagree	Disagree	Neutral	Agree	Strongly agree
2. Please provide feedback for how this education session could be improved the following space:				

Abbreviation: EPIQ, Emergency Preparedness Information Questionnaire.

Describe your level of confidence in your ability to effectively respond in an MCI event on a scale of one to five, with one (very low) and five (very high)

Key:

1. I have a very low level of confidence in my ability to effectively respond in a MCI event.
2. I have a low level of confidence in my ability to effectively respond in a MCI event.
3. I have moderate level of confidence in my ability to effectively respond in a MCI event.
4. I have a high level of confidence in my ability to effectively respond in a MCI event.
5. I have a very high level of confidence in my ability to effectively respond in a MCI event.

__Please circle your level of confidence ___

1 2 3 4 5

Appendix J

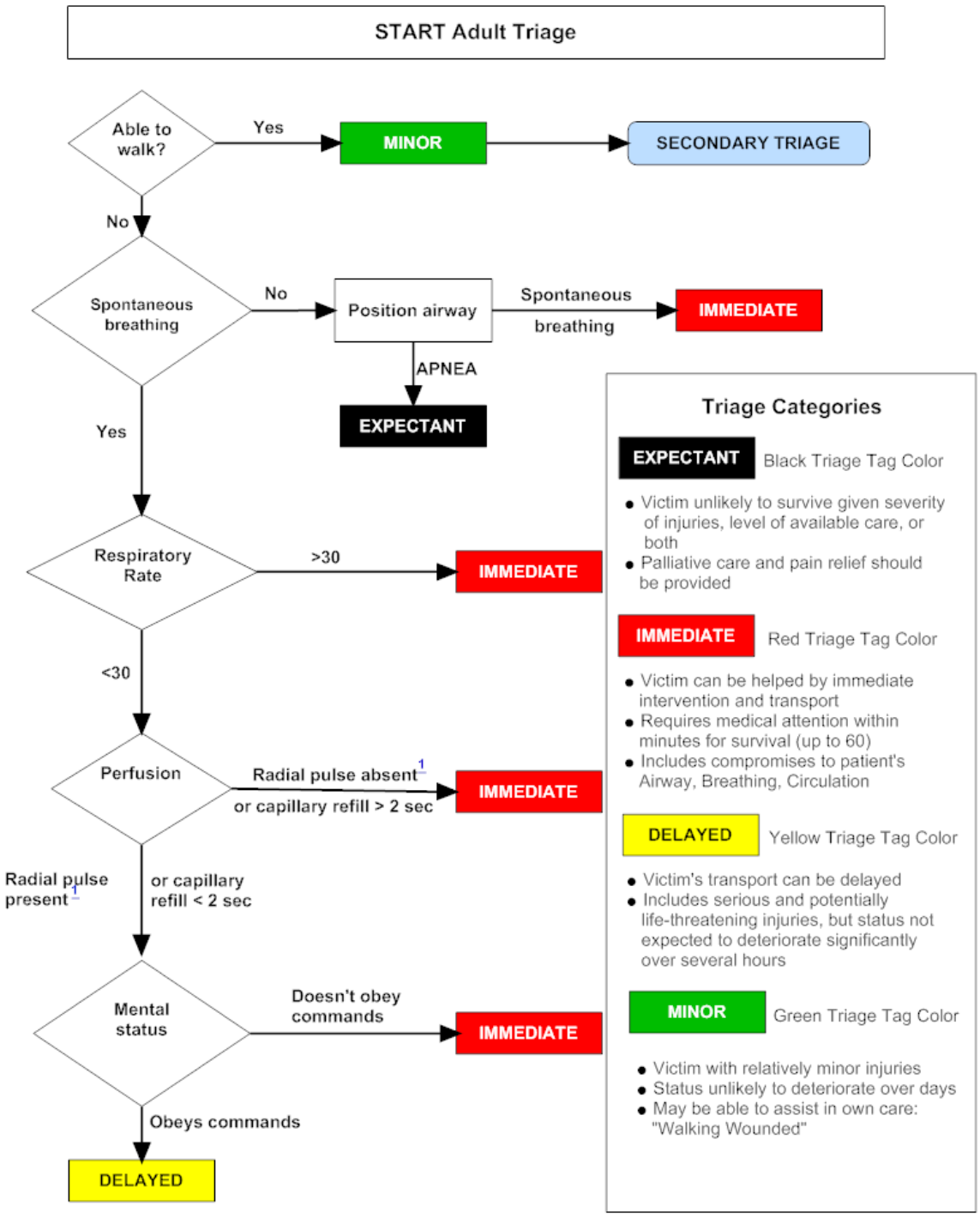
Permission to Use the ICN Core Competencies in Disaster Nursing Version 2.0

© 2020 International Council of Nurses (ICN) Copying, downloading and distribution of material from the ICN web page is permitted as long as credit in print is given and that the material will not be used for commercial or for-profit purposes without permission.

Copyright © 2019 by ICN - International Council of Nurses, 3, place Jean-Marteau, 1201 Geneva, Switzerland

Appendix K

The Simple Triage and Rapid Treatment (START)



Appendix L

Permission to Use and Publish the Simple Triage and Rapid Treatment (START)

NLM Copyright Information:

Attribution and Rights for Government Works: Works produced by the U.S. government are not subject to copyright protection in the United States. Any such works found on National Library of Medicine (NLM) Web sites may be freely used or reproduced without permission in the U.S. Please acknowledge NLM as the source of the information by including the phrase "Courtesy of the U.S. National Library of Medicine" or "Source: U.S. National Library of Medicine."

Appendix M

Permission to Use the Shasta Medical and Health 2016 Mass Casualty Incident Tabletop Exercise

[redacted]

Tue 1/7/2020 9:13 PM

Deramo, Christopher

[EXTERNAL EMAIL: Do not click any links or open attachments unless you know the sender and trust the content.]

Hi Christopher,

Yes, that would be allowable. I would like to know how it was useful to you if you are willing to share.

[redacted]

Emergency Preparedness Unit, PHEP/HPP Coordinator
Shasta County Health and Human Services Agency (HHSA); Public Health Branch
Community Health Protection (CHP) Division

[redacted]

www.shastahhsa.net

"Engaging individuals, families and communities to protect and improve health and wellbeing"

Shasta County
Health & Human
Services Agency