

University of Louisville

## ThinkIR: The University of Louisville's Institutional Repository

---

Electronic Theses and Dissertations

---

5-2018

### Implementation of emergency preparedness in long term care and Rogers' diffusion of innovation theory.

Elizabeth M. Shiels  
*University of Louisville*

Follow this and additional works at: <https://ir.library.louisville.edu/etd>



Part of the [Social and Behavioral Sciences Commons](#)

---

#### Recommended Citation

Shiels, Elizabeth M., "Implementation of emergency preparedness in long term care and Rogers' diffusion of innovation theory." (2018). *Electronic Theses and Dissertations*. Paper 2905.  
<https://doi.org/10.18297/etd/2905>

This Doctoral Dissertation is brought to you for free and open access by ThinkIR: The University of Louisville's Institutional Repository. It has been accepted for inclusion in Electronic Theses and Dissertations by an authorized administrator of ThinkIR: The University of Louisville's Institutional Repository. This title appears here courtesy of the author, who has retained all other copyrights. For more information, please contact [thinkir@louisville.edu](mailto:thinkir@louisville.edu).

IMPLEMENTATION OF EMERGENCY PREPAREDNESS IN LONG TERM CARE  
AND ROGERS' DIFFUSION OF INNOVATION THEORY

By

Elizabeth M. Shiels  
B.A., Trinity College, 1969  
M.S.S.W., University of Louisville, 1993

A Dissertation  
Submitted to the Faculty of the  
Raymond A. Kent School of Social Work of the University of Louisville  
In Partial Fulfillment of the Requirements for the Degree of

Doctor of Philosophy  
in Social Work

Kent School of Social Work  
University of Louisville  
Louisville, Kentucky

May 2018

Copyright 2018 by Elizabeth M. Shiels

All rights reserved



IMPLEMENTATION OF EMERGENCY PREPAREDNESS IN LONG TERM CARE  
AND

ROGERS' DIFFUSION OF INNOVATION THEORY

By

Elizabeth M. Shiels

B.A. trinity College, 1969

M.S.S.W., University of Louisville, 1993

A Dissertation Approved on

November 17, 2017

By the following Dissertation Committee

---

Bibhuti K. Sar, PhD

---

Gerard "Rod" Barber, PhD, MPH

---

E. Ramona Stone, PhD

---

H. Arleen Johnson, PhD

## DEDICATION

This dissertation is dedicated to my siblings, especially Dr. Williams E. Shiels, II.

They have been my core champions, all ten of them! It is hard to describe how our family values of perseverance, excellence, integrity and humor have carried me to this end point. I think of all of you with a warm smile, a belly laugh and tears of gratitude for your support.

We have shared it all.

## ACKNOWLEDGEMENTS

I have been surrounded by supportive communities of family, friends, faculty, and professional colleagues in this endeavor over these many years. It has required patience and ongoing support from all the communities as I have attempted to complete this course of study and maintain a work life that has had to keep pace with disasters, regulatory changes, decreases in Congressional funding and everything that is involved with emergency preparedness and response.

My first acknowledgement is to Dr. Rod Barber for his leadership, commitment and integrity in everything that he does. Dr. Barber introduced me to the Kent School in 1991 when I was making a dramatic shift in the direction of my life. In addition, his example and support created an environment that challenged ways to look at ideas and theories that give credence to our work together and this study.

The additional faculty members of the committee have all played major roles in my development as a professional and served to imbue social work values in all of my work. There are insufficient words for Dr. Arleen Johnson for our work together with Kentucky long term care and the KY Preparedness Branch of the KY Department for Public Health. You have championed me to grow and flourish in this work while creating together and laughing together in what has turned into the only effort of its kind in the country. You are a bright star in the universe!

The contribution by Dr. Ramona Stone to my professional life in research has been so generous and it is difficult to separate that from who Ramona is at her core. Thank you for teaching me, making me better in what I do and for being my friend. Another committee member is Dr. Seana Golder. I still remember the first time Seana made a presentation about her research to our cohort in the first semester of our first year. It was clear then and remains clear that Seana is a true researcher and a true social worker. Your dedication to quality research, your personal support all these years and your values have guided my life as a professional social worker. And, Dr. Bibhuti Sar, director of the doctoral program, has been so patient and guided me so well in this process. I have truly benefited from you challenging my thinking and staying engaged during our discussions of the complexities of emergency preparedness. It is not a typical topic for a social work research study.

My friends are wonderful! They have waited a long time for me to “be free to play” with them. They have not left me in spite of my lack of availability and I can’t wait to concoct a play list with them.

I want to acknowledge my colleague, Diana Jester, without whom I could not have completed this dissertation. Diana has been a champion and a great editor. I enjoy your passion in our work and the many times you are my partner at 2am when an emergency call comes in and we have to respond.

And, lastly, to my partner, Liz, who has nurtured my passion for emergency preparedness and been so supportive of this goal to graduate. You are always generous when I have to stop everything and help a long term care facility in a disaster or avert a disaster. Kentucky has a secret responder in you and I am so grateful.



## ABSTRACT

### IMPLEMENTATION OF EMERGENCY PREPAREDNESS IN LONG TERM CARE AND ROGER'S DIFFUSION OF INNOVATION THEORY

Elizabeth M. Shiels

May 11, 2018

Kentucky is one of the top ten states in the U.S. in the number of Presidential Declarations of Disaster (PDD) over the past ten years. This is due to its geology and weather patterns. The far western portion of Kentucky lies on the New Madrid Seismic Zone, one of the most dangerous fault lines in the United States; and natural hazards such as tornadoes, earthquakes, flash floods, severe storms offer only minutes or even seconds of advance notice. These “no-notice” emergencies with no timely warnings are the most common hazards experienced in Kentucky.

In these events, individual long term care facilities and local/state responders rely even more so on good planning (Bolton & Zimmerman, 2007; Waxman et al., 2017). Emergency responses need to be based on sound plans that are pre-tested using exercises organized and facilitated by community partners that include first responders. The lessons learned by the research about solid decision-making for shelter-in-place or evacuation decisions are just as important in no-notice events as hurricane emergencies.

In 2016, CMS announced a Final Rule for Emergency Preparedness for seventeen categories of health care providers, including long term care facilities, with a required

implementation date of November 2017. The components of the CMS Final Rule are comprehensive, wide-reaching and very new to many LTC facilities creating apprehension, confusion and a strain on management resources.

The conceptual foundation/theory chosen to assess the process of diffusion, adoption and implementation of emergency preparedness of KY LTC is Everett Rogers' Diffusion of Innovation Theory (Rogers,1995). A survey based on best practices for long term care preparedness was sent to ninety-one KY LTC that had attended training in emergency preparedness to identify the adoption and implementation levels of their preparedness and their readiness to reach compliance with the CMS Final Rule. Fifty completed responses were received and analyzed. Results found that 70% of LTC had adopted comprehensive best practices and over 74% and 72% had participated in training and emergency exercises, respectively. A further 90% had established partnerships with their first responders and/or participated in their regional health care coalitions.

Evacuation preparedness presents a gap in planning and requires ongoing support and emphasis. Diffusion of Innovation theory proved valuable in measuring the impact of relationships, communication and overall preparedness. The theory also identified the significance of change agents as key players in diffusion and adoption resulting in implementation. The most utilized change agents were the KY Emergency Preparedness for Aging & LTC Program, the two state long term care associations and the KY Office of Inspector General. Regional health care coalitions were found to be the major source of preparedness networking.

## TABLE OF CONTENTS

|   | PAGE |
|---|------|
| ACKNOWLEDGMENTS.....                                | iv   |
| ABSTRACT.....                                       | vi   |
| LIST OF TABLES.....                                 | x    |
| LIST OF FIGURES.....                                | xi   |
| INTRODUCTION.....                                   | 1    |
| Statement of the problem.....                       | 1    |
| Purpose of study.....                               | 19   |
| Importance of the study to social work.....         | 20   |
| LITERATURE REVIEW.....                              | 21   |
| Previous Research.....                              | 21   |
| Conceptual Foundation/Theory.....                   | 26   |
| Diffusion of Innovation Theory.....                 | 27   |
| Attributes associated with innovation adoption..... | 28   |
| Factors influencing Diffusion of Innovation.....    | 31   |
| Types of Innovation Decisions.....                  | 34   |
| Stages of the Innovation-Decision Process.....      | 35   |
| Characteristics of adopters.....                    | 36   |
| METHODOLOGY.....                                    | 40   |
| Purpose of Study.....                               | 40   |
| Study Variables and Measures.....                   | 42   |
| Sample Selection.....                               | 46   |
| Data Collection.....                                | 47   |

|                                     | PAGE |
|-------------------------------------|------|
| Consent procedures.....             | 47   |
| RESULTS.....                        | 48   |
| Response Rate.....                  | 48   |
| Data Analysis Approach.....         | 48   |
| Response to Research Questions..... | 49   |
| DISCUSSION.....                     | 82   |
| Limitations of the study.....       | 86   |
| Practice implications.....          | 87   |
| Future research.....                | 88   |
| Conclusion.....                     | 89   |
| REFERENCES.....                     | 90   |
| APPENDIX.....                       | 100  |
| CURRICULUM VITA.....                | 111  |

## LIST OF TABLES

| TABLE  | PAGE |
|--|------|
| 1. Kentucky and Gulf State Requirements for Nursing Home<br>Emergency Plans.....             | 17   |
| 2. Profile of Sample Characteristics.....  | 50   |
| 3. Respondents' Characteristics.....   | 52   |
| 4. Current Elements in LTC Facilities' Emergency Preparedness Plan.....                      | 54   |
| 5a. Best Practices Facility Has in Place .....   | 58   |
| 5b. LTC Adoption of CMS Recommended Guidelines.....  | 59   |
| 5c. Disasters Addressed by the Facility Preparedness Plan.....                               | 61   |
| 6. Discussed Emergency Preparedness with Community Partners.....                             | 63   |
| 7. Facility Operations.....  | 65   |
| 8. Comparison of Evacuation Readiness Index Scores by Selected<br>Independent Variables..... | 68   |
| 9. LTC Experience with Training and Exercises.....   | 70   |
| 10. Mean Differences Across Emergency Plans.....   | 73   |
| 11a. Adoption Scale.....   | 77   |
| 11b. Implementation Scale.....   | 80   |

LIST OF FIGURES

| FIGURE                            | PAGE |
|-----------------------------------|------|
| 1. Kentucky ASPR HPP Regions..... | 3    |

CHAPTER I  
INTRODUCTION

**Statement of the Problem**

*“No-notice catastrophic disasters pose one of the greatest challenges to national emergency preparedness, whether caused by manmade attacks or natural events...For example, federal emergency response planning estimates on the consequences of a catastrophic earthquake along known fault lines in the central United States include impacts to multiple states and more specifically project over 75,000 casualties (injured and fatalities), more than 380,000 displaced from their homes and communities, at least 330,000 buildings moderately or severely damaged, and direct economic losses surpassing \$200 billion”. (p.1, Government Accountability Office, 2014).*

Kentucky is one of the top ten states in the U.S. in the number of Presidential Declarations of Disaster (PDD) over the past ten years. This is due to its geology and weather patterns. The far western portion of Kentucky lies on the New Madrid Seismic Zone, one of the most dangerous fault lines in the United States; and natural hazards such as tornadoes, earthquakes, flash floods, severe storms offer only minutes or even seconds of advance notice. These “no-notice” emergencies with no timely warnings are the most common hazards experienced in Kentucky. Since 2008, the risk to Kentucky experiencing one or more no-notice events has increased. The combination of increased likelihood of incidence, severity, and disastrous impact on life and infrastructure place 287 Kentucky long term care (LTC) facilities at critical risk for hazardous outcomes.

The complexity of community response in a no-notice event involves multiple response agencies, jurisdictions, effective communication between responders and jurisdictional leadership and the community, transportation planning and resilience on the part of the affected populations (Waxman et al., 2017; Bolton & Zimmerman, 2007). In order to increase the preparedness for a catastrophic earthquake originating from the New Madrid Seismic Zone, a potentially catastrophic no-notice disaster, Congress mandated a National Level Disaster Exercise be conducted in 2011 across the states most at-risk for severe damage. Eight at-risk states were identified: Missouri, Tennessee, Kentucky, Indiana, Illinois, Mississippi, Arkansas and Alabama. The epicenter of a 7.7 scale earthquake on the New Madrid fault would likely be Memphis, Tennessee. Each state developed their own exercise to respond to the degree of risk identified by the U.S. Geological Service (USGS, 2011). USGS applied current technology to the original data based on damage experienced during the great New Madrid earthquake of 1811.

Under these circumstances, Kentucky is estimated to experience catastrophic damage in the far western regions of the state with an estimated 300 fatalities and 7,000 casualties. These estimates, however, do not include the approximate 4,400 licensed nursing facility beds, 2,400 personal care beds, and 4,000 persons daily receiving home health services who would be especially vulnerable to a catastrophic event. (USGS, 2011).

Damage to buildings, hospitals, schools and family dwellings would be severe with almost one-third of all structures in KY receiving moderate to severe damage. Structural damage to buildings would include severe impact to all hospitals in three western regions such that they would be inoperable. All nursing homes would be significantly impacted ranging from total destruction to loss of working utilities including phone, water,





evacuation need. The severity of impact to this region would be immediately devastating and would remain so for many years to come.

The Pennyroyal region (Region 2) could experience significant power, water, telephone outages, sinkhole damage, and impassible road conditions. Recovery response could take up to two weeks for the region to be moderately functional. The Green River region (Region 3) would experience some liquefaction, mainly in cities and counties bordering the Ohio River. Infrastructure could be severely damaged requiring some evacuations and at least a month long delay in its replacement. Facilities with less significant damage could have water, power, sanitation and telephone access restored to a sufficient degree within that timeframe. Some areas of the region could provide support to those farther west and south.

Needless to say, the impact on the LTC facilities in the three regions (20 counties) at the highest risk for no-notice events is a major concern to planners, policymakers and responders as would be their concern for the impact on hospitals and other critical infrastructure. An analysis of LTC average daily census in the three regions most at-risk indicates that if all LTC facilities in the three regions needed to evacuate, there would be a statewide shortage of 2281 licensed beds in LTC facilities available to receive evacuees (KY CHFS, 2013).

States with frequent hurricanes know this planning very well and have transportation agreements in place, emergency supply storage, vendor agreements and alternate care sites pre-established with sufficient time to evacuate before the event. Kentucky, however, experiences disaster events with little-to-no advance notice. By the time the event occurs, transportation systems could be fully assigned elsewhere and road

access could be damaged and impassable. Selection of alternate care sites for evacuation in a catastrophic disaster in Kentucky would require the best-available option, that is a “stable” building in closest proximity to the damaged facility. LTC facilities would be on their own to transport residents, food, supplies, mattresses, medications, client records, assistive devices, and medical equipment literally down the street to a “stable” building until help could arrive within 72-96 hours. LTC facilities located in rural areas have fewer options as proximity to alternative sheltering is significantly less than urban LTC sheltering locations and longer travel distances are involved. In that case, good relationships with neighbors with tractors, trucks and other vehicles would be the only option.

*HOLLYWOOD, Florida—After an estimated 215 people died in hospitals and nursing homes in Louisiana following Hurricane Katrina in 2005, policy makers realized that the nation’s health care institutions were ill-equipped for disasters.*

*One of the rules they created after years of discussion looked especially prescient in light of the tragic deaths on Wednesday of eight nursing home residents in Florida’s post-hurricane heat. But the rule, powering supplies and temperature control, will not be enforced until November....” (Neil Reisner and Sheri Fink, Sept. 14, 2017; The New York Times).*

Following the hurricane season of 2005, beginning in 2006, the Office of Inspector General, Department of Health and Human Services (DHHS) reported out the results of a study to assess nursing home performance during the hurricanes of 2004-2005. As a result, recommendations were issued for “guidelines” for comprehensive emergency preparedness for long term care facilities (CMS, 2006, 2013). The guidelines, however, have been voluntary. In 2016, CMS announced a Final Rule for Emergency Preparedness for seventeen categories of health care providers, including long term care facilities, with a required implementation date of November 2017. The components of the CMS Final

Rule are comprehensive, wide-reaching and very new to many LTC facilities creating apprehension, confusion and a strain on management resources.

Between the 2006 issuance of recommended guidelines and November 2017, the United States has experienced catastrophic hurricanes with Hurricane Irene in 2011, Hurricane Sandy in 2012, and Hurricanes Harvey and Irma in 2017. In the absence of comprehensive preparedness planning, evacuation decision-making and emergency response implementation, the same issues of vulnerability of long term care residents' safety remain.

An estimated 48 million or 14.9% of the U.S. population is 65 or older (Administration on Aging [AOA], 2016). The Administration on Aging (AOA) estimates the majority of older persons have at least one chronic health condition with the average number increasing with age. The most common chronic conditions include hypertension (72%), arthritis (50%), heart disease (30%), cancer (24%), and diagnosed diabetes (20%). Approximately 35.9% of older persons report some type of disability, be it hearing, vision, cognition, or independent living difficulty (AOA, 2013). These functional limitations become severe and increase with age. For instance, it has been reported that 83% of Medicare beneficiaries have difficulty with at least one or more activities of daily living (ADLs), such as bathing, ambulation, eating, dressing oneself, toileting and transferring. Sixty-seven percent had difficulty with three or more activities of daily living (AOA, 2010).

By the end of 2014, an estimated 1.4 million persons in the U.S. lived in long term care (LTC) facilities representing 2.6% of the over-65 and 9.5% of the 85+ year old population. Almost half of nursing home residents need assistance with four out of five

ADLs (Centers for Medicare and Medicaid [CMS], 2009). In 2014, approximately 61.4% of nursing home or LTC facility residents had moderate to severe cognitive impairment with 38.7% having severe impairment. An estimated 38.7% of residents had none to mild cognitive impairment with Kentucky numbers running less than the national average, suggesting well over 61% have some form of cognitive impairment (CMS, 2016).

Given their advanced age, physical and cognitive difficulties, the elderly have little physical or emotional reserve remaining to cope with other stressors, particularly the stress of a natural disaster (Fernandez, 2002; Johnson et al., 2006; Mokdad et al., 2005). Special needs are more likely to arise for the elderly during and after a natural disaster or terror attack. Cognitive impairment can be exacerbated. Evacuation can create disorientation, trauma response or potentially death and refusal to evacuate can put them at greater risk of disability, disease or death (Pekovic, Seff, & Rothman, 2008). Vulnerability of home-dwelling elders increases in prolonged power outages as access to nutrition, power needs for medical equipment, and physical access to first responders is compromised. Caregiver abandonment of the frail elderly have also occurred before they can be evacuated to a shelter (Silverman & Weston, 1995).

Elders are at greater risk for illness and death due to exposure to the heat and the cold during and in the aftermath of a natural disaster. For instance, during the Chicago Heat Wave of 1995, of the close to 700 deaths that occurred, the median age of the deceased was 75 (Semenza et al., 1996; Aldrich & Benson, 2008) and 72% of the heat-related deaths were persons 65 and older (Whitman et al., 1997). Most recently, during Hurricane Irma in Florida in 2017, eight (8) residents of a nursing facility in Hollywood, Florida, died from heat exposure during a storm-related power outage.

Even prior to the terrorist attacks of September 11, 2001, natural disasters during the 1990s (i.e. hurricanes, earthquakes, ice storms and prolonged power outages) had already highlighted the special vulnerabilities of older persons and the health care systems serving them. Vulnerabilities, especially for those living in LTC facilities, included ill-equipped community shelters. The time required for evacuating elders to shelters was significantly longer than for non-frail persons; critical personal identification information often was lacking such as name, picture IDs, special needs identification, health conditions and medication requirements.

The capacity to manage the needs of LTC facilities' staff and the rest of the community was greatly stressed during Hurricane Andrew in 1992. One 500-bed nursing facility swelled by an additional 500 family members of staff and community-dwelling frail elders needing shelter and medical assistance in the face of electrical and water outages (Silverman & Weston, 1995). During the Northridge, California earthquake in 1994, not only did twenty-three long term care facilities sustain significant damage with five facilities finding it necessary to close, 52% of nursing facilities admitted evacuees from hospitals, other nursing facilities and community-dwellings housing elders (Saliba, Buchanan & Kington, 2004) swelling their populations in the midst of severe utility outages.

The 9/11 attacks on the World Trade Center Towers created mass structural devastation to the buildings, to the neighborhoods surrounding the towers and placed a never-before experienced strain on first responders and their communication networks and infrastructure including land lines and cell phones, hospitals, and transportation resources. A review of the published literature on managing disasters and recovery efforts in the aftermath of the 9/11 attacks underscored time and time again that the greatest gaps in the

response to the unprecedented tragedy occurred in communication between and among responders, among families and business that can be best stated as the inadequate capacity to respond, protect, and defend citizens and property on US soil (General Accounting Office, 2006). First responder agencies, such as fire departments, police, emergency medical services and private security personnel had no means of communication across agencies. Each agency operated its own communication network using its own frequencies and types of communication equipment so responders from different agencies had no way of knowing what was happening in overall incident response. This led to hundreds of deaths of responder personnel and created barriers to other response agencies to back-up and support first responders (GAO, 2006). Communication was also severely hampered among family members trying to contact each other to make sure they were safe; employers were unable to contact employees to maintain company operations; and, healthcare personnel were unable to track patient activity or deceased patients. Telephone usage was so great coming in and going out of the New York area that the telecommunications networks did not function. Family members went for days and weeks without knowing if their loved ones were safe or in the hospital or possibly dead (GAO, 2006)

Later it was found that isolated frail seniors living alone, possibly harmed from toxic exposure to the air and without food or necessary resources, were not identified for over a week because responders and providers did not know they were there. Another barrier was identification and assessment of the status of frail elders living in the area adjacent to the attack site because providers of care for elders were not permitted in the area of the attacks. Children in day care in the surrounding area, however, were identified within hours because there was a family member who knew where they were. It only took

days for house pets to be checked and identified because owners knew where they were. The isolated frail seniors who did not have family waited for the system to get to them (O'Brien, 2003), indicative of how little emphasis had been given to elder safety and preparedness.

What was most apparent from the terror attack was the nation was not prepared to respond in a coherent, collaborative, effective manner to a major disaster from an internal threat or an external threat with no advance notice. Lack of preparedness crossed all lines including the emergency response network, the healthcare system, public health as well as individuals, families and organizations.

Three parallel efforts related to strengthening the health care system response followed on the heels of the 9/11 attacks: 1) the vulnerability of special populations, particularly older persons, 2) changes in and funding to the national preparedness structure, and 3) more clarity for the role of the health care system. Homeland Security was mandated to establish an Emergency Response Plan. The Plan's objectives were to combine a wide variety of Federal plans into one comprehensive plan to address the prevention, preparedness, response and recovery phases of emergency events incorporating all disciplines and addressing all-hazards ranging from natural disasters to manmade disasters (2002). The Plan called for coordination of incidents that reach beyond local and State capabilities while integrating local and State jurisdictions in coordination, communication and incident management structures. While hospitals were accredited by The Joint Commission regarding emergency preparedness for many years, no such depth of requirements existed for long term care facilities at the Federal or State levels.



At the state level, Kentucky's Division of Emergency Management (KYEM) is the state equivalent of FEMA and is tasked with creating a statewide system of mitigation, preparedness, response and recovery. It includes development of an overall State Emergency Management (EM) Plan and management of the state Emergency Operations Center. Kentucky EM is prepared to respond to any event twenty-four hours a day, seven days a week. Its authority is derived from the Kentucky legislature (KRS 39) and the Federal National Response Framework. Kentucky Emergency Management (KYEM) appoints regional emergency managers across 14 regions in the state. Under Federal statute, each county and political jurisdiction must also have an emergency manager. These county emergency managers report to the local county judge or mayor. Kentucky has 120 counties, each with a County Judge Executive. There are 120 county emergency managers in the Commonwealth each with a different chain of command.

Following hurricanes Katrina and Rita, Congress transferred preparedness funding to the Department of Health and Human Services (DHHS), Office of Assistant Secretary for Preparedness and Recovery (ASPR). Federal funding shifted away from bioterrorism and weapons of mass destruction to preparedness for any threat to a locale, a County, or region (all-hazards) whether it is a natural threat or manmade threat. The Kentucky Department of Public Health (KDPH) has responsibility for the same mitigation, preparedness, response and recovery coordination in matters regarding the public's health. The KDPH preparedness branch coordinates and collaborates with KYEM and is an integral partner on most matters relating to Kentucky preparedness and response.

KDPH also administers the Kentucky Hospital Preparedness Program (HPP) on behalf of the Department of Health and Human Services ASPR funding. The HPP program

is organized into 13 HPP regions with regional health care coalitions. Hospital Preparedness regional health care coalitions meet monthly, bi-monthly or quarterly depending on the structure of each region to address hospital and other healthcare organizations all-hazards preparedness for and response to biological, environmental and weather-related disasters. These include tornados, floods, power outages, pandemic flu, chemical attack and/or spills and other national events that effect the operations of healthcare organizations and their patients, including hospitals and nursing facilities.

HPP regional health care coalition members include regional and local emergency managers, hospital management, health planners, as well as representatives from mental health, long term care representatives, Emergency Medical Services, Veterans Administration, Fire Service, schools of public health and social work among others. The range of membership representation suggests the variety of response and planning agencies that work together on a regular basis to coordinate efforts and share learning. Participating members are required to be knowledgeable about preparedness and be certified in the National Incident Management System (NIMS) Incident Command System (ICS). The HPP regional health care coalitions are organized by Area Development Districts and monthly or quarterly regional Coalition members meet to share their planning and lessons learned from regional events.

The functions of the Kentucky HPP include:

- A regular forum for the healthcare community and first responders at the county, regional and state level to promote emergency preparedness;
- Coordinate and improve delivery of health care response in an emergency;
- Foster communication among members at all levels on preparedness and response;

- Ensure community response readiness through training and exercises;
- Promote preparedness in the healthcare community through standardized practices and integration with response partners.

([www.louisvilleky.gov/Health/HERA.com](http://www.louisvilleky.gov/Health/HERA.com))

KDPH staff had been tasked with recruiting the long-term care providers to participate in the regional hospital preparedness coalitions since the original HRSA funding of 2002. The KDPH Preparedness Branch had attempted to work with long term care for two years with little success. KDPH set aside \$100,000 of ASPR funds to create an incentive for long term care facilities specifically to participate in the regional HPP program for equipment and training purchases. KDPH had also purchased a national LTC training model for all Kentucky LTC facilities under the condition the facilities attend a train-the-trainer session and take the training back to their facilities/regions. Neither of the efforts proved effective. Of the \$100,000 made available to LTC, approximately \$70,000 went unspent. A number of facilities sent trainers and ultimately nothing happened beyond that. Facilities did not incorporate the national model nor train staff. Financial incentives did not work.

In 2008, the KDPH Preparedness Branch asked the University of Kentucky and University of Louisville to shift focus from their effort of bioterrorism training of community-based agencies serving seniors to an HPP all-hazards' preparedness approach for KY LTC facilities. That effort provided training to community-based agencies serving seniors in bioterrorism, all-hazards and pandemic flu preparedness. The two universities had worked with all of the regional Area Agencies on Aging in the state and developed partnerships with public health emergency planners, trainers and coordinators across the

state as well as county emergency managers. The community-based aging agencies served by the universities had come a long way during that time to develop organizational plans and foster staff individual and family plans. Based on that success, KDPH asked the partnership to attempt to make headway with long term care.

KDPH contracted with gerontology faculty from KY's two largest universities to engage long term care and the Hospital Preparedness Program coalitions with the creation of the KY Emergency Preparedness for Aging & LTC Program (KYEPA). One of the initial objectives of the new program was to increase the number of KY LTC facilities' involvement in their HPP regional health care preparedness coalitions, and second, to expand the capacity of Kentucky's long term care facilities to respond to disasters by creating a statewide manual specifically for long term care and to train KY LTC facilities in the National Incident Management System Incident Command System (NIMS). Partners were added each year as products, tools and training were developed to meet the most recent needs.

LTC facilities were highly resistant to anyone carrying the message, "I am from the state or HPP and I am here to help". After all, the LTC industry is so heavily regulated that facilities do not welcome any additional requirements and the state regulators report to the Centers for Medicare and Medicaid Services regional offices. The last step for Kentucky preparedness with LTC was to go outside of the department to persons with knowledge of and relationships with the aging network.

A string of years of very severe weather impacted the state (2008-2010), especially the western part of the state. Interest in attending trainings and coalition meetings increased as regions experienced storms. The KYEPA program provided training through the HPP

regional health care coalitions, state LTC associations, emergency management, state Department of Homeland Security, aging networks among others. Ease of access to training and coalition activities were supported by partner organizations, electronic media and live presentations.

A handful of long term care administrators and staff had attended some HPP regional health care coalition meetings. These early adopters struggled to stay engaged because of the disparate cultures of organizations around the tables. Emergency management language was alienating, hierarchical and militaristic. Long term care was viewed as a source of surge capacity for hospitals with the hospitals offering nothing in return. In fact, in some HPP regional health care coalition meetings, hospital representatives actually told the group that “long term care should not be there because there were not enough resources to share with them and they never wanted to hear the phrase long term care again”. The special needs and vulnerabilities of the nursing facility population did not factor into the picture. This changed with the 2005 hurricane season.

The lack of CMS regulations was a barrier to adoption of emergency preparedness plans by LTC facilities. Regulations were limited to very few elements and some lacked specificity. LTC State surveyors followed criteria for preparedness established under Sections 1819 and 1919 of the Social Security Act. These are identified in State surveyor requirements of:

- F517 “The facility must have detailed written plans in emergency procedures to meet all potential emergencies and disasters, such as fire, severe weather and missing residents...”

- F518 “The facilities must train all employees in emergency procedures with existing staff, and carry out unannounced staff drills using those procedures” (DHHS, 2006).

The unannounced drills typically are applied to the mandatory fire drills required four times a year. Facilities are also required to have a backup generator with the ability to power emergency lighting and power outlets for life-sustaining equipment. Additional requirements include emergency supplies of food and water supplies, up to 2-3 days, and to identify an alternate care site in the event of an evacuation.

Coastal states, especially Florida and Texas, have legislated best practices well beyond the CMS regulations. Kentucky’s emergency plan had only 8 out of the 22 (36%) requirements in place (see Table 1).

**Table 1: Kentucky and Gulf State Requirements for Nursing Home  
Emergency Plans**

| State Requirements  | KY | AL* | FL | LA | MS | TX |
|---|----|-----|----|----|----|----|
| Community coordination  |    |     | X  | X  | X  | X  |
| Hazard analysis   |    |     | X  |    | X  | X  |
| Communication   |    |     | X  |    | X  | X  |
| Direction and control   |    |     | X  | X  | X  | X  |
| Specific resident needs   | X  |     | X  | X  |    | X  |
| Staffing  | X  |     | X  | X  |    | X  |
| Emergency food, water, supplies   | X  |     | X  | X  | X  | X  |
| Emergency power   | X  |     | X  |    | X  | X  |
| Medications   | X  |     | X  |    | X  | X  |
| Evacuation procedures   | X  |     | X  | X  | X  | X  |
| Evacuation route  |    |     | X  |    |    | X  |
| Transportation  |    |     | X  | X  | X  | X  |
| Host facility agreement   |    |     | X  | X  | X  | X  |
| Transfer of medical records   |    |     | X  |    |    | X  |
| Re-entry  |    |     | X  |    | X  |    |
| Document training and drills  | X  |     | X  | X  | X  | X  |
| Reviewed annually   |    |     | X  | X  |    | X  |
| Staff telephone lists   | X  |     | X  | X  |    |    |
| Responding to family inquiries  |    |     | X  | X  |    |    |
| Individual identification of residents  |    |     | X  |    |    |    |
| Designated area for supply storage  |    |     |    | X  |    |    |
| *Alabama relies on Federal requirements.  |    |     |    |    |    |    |
| Source: Office of Inspector General analysis of State administrative code and requirements in four Gulf States, (2006). |    |     |    |    |    |    |

A 2006 study, funded by the Federal Office of the Inspector General following Hurricanes Katrina and Rita, changed the awareness of LTC preparedness planning. It found that 94% of LTC facilities in their survey did indeed have emergency plans and 80% had completed staff training in emergency planning, meeting the Centers for Medicare and Medicaid Services' (CMS) requirements at the time. However, the content of the plans was found to be lacking in specificity as there were no precise CMS guidelines met or followed as to what comprises an emergency plan. Further, the study found that in the face of an emergency, administrators did not follow their plans, contributing to unsafe conditions and increased potential for death and injury (DHHS, 2006). Recommendations from this original 2006 study were summarized into two categories: 1) CMS should provide more specific requirements for emergency plans and, 2) CMS make clear its support for communication between LTC facilities and emergency responders. Based on these recommendations, CMS issued a 25-item recommended checklist for LTC plans.

A 2012 Office of Inspector General follow-up report of national compliance for emergency preparedness regulations from 2007-2010 found that compliance with these same regulations had decreased to 92% and 72%, respectively. In the meantime, CMS had issued recommended checklists to LTC, State survey agencies and LTC Ombudsman providing greater specificity and detail as to tasks to be incorporated in comprehensive emergency plans.

There are stark examples of the risks to nursing home facilities or LTC in disasters whether they be related to hurricanes, earthquakes, tornadoes, or flooding. And yet, even after catastrophic disasters that clearly put LTC residents in danger, long term care facilities have been reluctant to implement comprehensive disaster planning. In an environment



where CMS, the chief regulatory agency for LTC, only provided “recommendations” about preparedness compared to literally thousands of regulations for LTC in general, are there effective ways to engage LTC or LTC to improve voluntary preparedness?

### **Purpose of study**

Although studies of LTC preparedness planning have been published in response to hurricanes in particular, the research studies investigating the degree of preparedness planning among LTC in no-notice disaster states are virtually non-existent. Previous LTC studies have focused on responses to catastrophic disasters such as hurricanes identifying steps in planning and mitigation that might have lessened the loss of life, damage to facility infrastructure and vulnerability of the population. The research has significantly contributed to the knowledge base of effective LTC preparedness and provides recommendations specific to anticipated, frequent disasters where pre-storm response to impending storms can be implemented days in advance enhancing safety and quality of life. This is not the case with no-notice events.

The purpose of this study is to add to this research and has two specific aims. The first is to conduct an analysis of the status of LTC preparedness in a no-notice state, highlighting state efforts to strengthen LTC preparedness and illuminate the gaps in preparation related to its voluntary nature in years prior to the CMS Final Rule. The study will assess Kentucky long term care emergency preparedness based on a survey administered to one-third of LTC facilities in 2014, particularly facilities that have been exposed to planning and training events for emergency preparedness. The second is to apply aspects of Diffusion of Innovation Theory (Rogers, 2003) to examine the diffusion, adoption and implementation of emergency planning practices both mandated and

voluntary for LTC facilities, especially in light of the promulgation of comprehensive new regulations. The two foci identify the status of one-third of Kentucky LTC facilities in regards to their preparedness for a no-notice event and identify the use of private and public supports that contributed to LTC facilities readiness for emergencies and the new regulations.

### **Importance of the Study to Social Work**

This study is important to social work for several reasons. It amplifies the role social work can play in the diffusion of new ideas. Historically, public health as a discipline has been the “natural” partner in training, managing exercise, motivating health care providers to make voluntary prevention changes and collaborating with emergency management. Social work brings a perspective of the person-in-environment and a tradition of relationship-building, especially in the field of aging, that also makes it a “natural” partner as well. Social workers serve in front line positions in LTC and can relate to the impact of regulations and resident-related issues that arise every day in a practice setting.

Leadership in health care advocacy, aging collaborations and the strength of its networks placed the opportunity for the Kentucky program to succeed. Relationships with state LTC associations contributed to the dissemination of new information and access to training settings never before available. The pathways identified with the spread of knowledge about innovation outside of the typical populations in social work serve to expand the opportunities for translation to practice and well-being of very vulnerable populations.

## CHAPTER II

### LITERATURE REVIEW

#### **Previous research**

As far back as Hurricane Andrew in 1992, the gaps in understanding needs of frail elders during disasters living in long term care were recognized (Silverman & Weston, 1995) and identified the biggest gaps as evacuation planning, communications, staffing and patient care. Frail elders were identified as extremely vulnerable in disasters following 9/11 (Johnson et al., 2006). The largest body of research on nursing home emergency preparedness has come out of the 2005 hurricane season that included Hurricanes Katrina and Rita. And, the greatest area of focus has been evacuation planning, transportation issues, evacuation decision-making, evacuation outcomes among the lessons learned related to evacuation (Dosa et al., 2007; Hyer, et al., 2012). This is understandable as the research has looked at catastrophic events in coastal areas where evacuation is the best option for the community including long term care facilities. The most frequent type of event fitting those characteristics are hurricanes.

A unique characteristic of hurricanes compared to other catastrophic events is that there is often advance notice of 3-5 days that the storm is coming and the potential scope of impact as in Hurricanes Katrina, Sandy, Harvey and Irma. This enables long term care administrators, emergency managers and first responders to evacuate facilities well in advance of the event. Transportation is problematic for LTC facilities as the logistics of evacuation in a catastrophic event are very complex. Determining evacuation zones and

their timing is challenging, evacuation too early can place residents at unnecessary risk (Dosa et al., 2007). If an entire neighborhood or community have to evacuate and all of the transportation resources are needed at the same time, it may be difficult to establish priority populations for limited transportation resources (Chiu & Zheng, 2007). Lack of coordination between local, state and national transportation resources may create delays in response (Chiu & Zheng, 2007). This also applies to coordination and collaboration with county emergency management.

There has also been a lack of clarity in the effective decision-making process to evacuate. How are risks weighed to evacuate or shelter-in-place? Sheltering in-place is the preferred option. Staff are already on-site, there may be space to shelter their families to ensure their availability and residents face fewer negative outcomes in a shelter-in-place situation. Sufficient provisions of water, food, medications are critical in sheltering-in-place as is adequate power supply. During a major disaster LTC facilities' fuel supplies may run out after 2-4 days. Transportation of backup fuel supplies may be hampered by routes being clogged or debris in the roads impeding transport. The same is true as to assignment of evacuees to sheltering in other long term care facilities or shelter space.

When a health care facility reaches maximum capacity to respond in an emergency and needs to send or "surge" patients to alternate sites during emergencies because incoming casualties placed pressure on the hospital's capacity to absorb them while serving existing patients (Hick et al., 2014), demands for bed space become overwhelming to the point that hospitals may discharge less acute patients to other hospitals or even nursing homes. In even the most common emergency situation for LTC, evacuation due to a fire,

receiving LTC facilities are limited by regulation to accept only as many evacuees from hospitals or other LTC as they have licensed beds available. In sum, the logistics of emergency response is only as effective as the degree of planning. The unanticipated variables are so varied that all the best planning can be for naught in a major event; however, in the absence of planning, the event will manage the response versus the facility response managing the event.

A major gap in the long-term care emergency preparedness literature relates to the experience of no-notice emergencies compared to advance notice events and voluntary adoption of comprehensive preparedness. The hurricane states have regulations that cover pre-incident response with 3-5 days advance notice during which target zones plan evacuation routes, mandatory evacuation and statewide sheltering, the coordination and assignment of buses, vans, ambulances, and other transportation resources.

Kentucky is not a coastal state and is in a “no-notice” zone where events occur, especially catastrophic events, without advance notice. In these events, individual long term care facilities and local/state responders rely even more so on good planning (Waxman et al., 2017; Bolton & Zimmerman, 2007). Emergency responses need to be based on sound plans that are pre-tested using exercises organized and facilitated by community partners that include first responders. The lessons learned by the research about solid decision-making to shelter-in-place or evacuate are just as important to no-notice events. These include having transportation agreements within the impact area and outside of 50 miles as well as similar agreements with other long term care facilities to receive evacuees, again in close proximity and beyond 50 miles.

In most cases, long term care facility emergencies are specific to a single facility, not a community event. In the event of a community event, prolonged shelter-in-place is more likely than immediate evacuation as the resources for available beds and transportation may not be available. Again, this is especially true in a no-notice event. Therefore, the ability to shelter-in-place with sufficient water, food, medication and supplies and fuel for the backup generator become critical.

CMS had not been willing to commit comprehensive preparedness to regulation until 2016-2017. Up to that time, state regulations and voluntary adoption and implementation of emergency preparedness have had to fill the many voids. Support for emergency preparedness for LTC has been driven by the DHHS Office of the Assistant Secretary for Preparedness and Response (ASPR) through the Hospital Preparedness Program.

One of the success stories from the 2005 hurricane season in Florida was the development of collaboration between the two state LTC associations and the state survey agency. A similar process was developed in Kentucky by the KYEPA program. The goals included creating a common state manual for LTC preparedness, engaging LTC in preparedness planning and participation in HPP regional health care coalitions. The Kentucky approach engaged LTC and health care policy stakeholders, change agents, LTC champions, regulators and HPP regional health care coalitions as well as state LTC associations. These disparate and often conflictual entities posed challenges and provided opportunities for collaboration.

Program activities included:

- Development of the *KY All Hazards LTC Planning and Resource Manual*

- Partnering with HPP regional health care coalitions to sponsor program training to LTC
- Partnering with the two state LTC associations to sponsor annual training at association conferences
- Creating opportunities for LTC facility leadership to serve on panels during program trainings to share their experiences with other LTC about recent emergencies
- Providing training to state and regional first responder organizations about LTC preparedness
- Working with the State Survey Agency (KY OIG) to create preparedness resources that integrate current regulations with evacuation planning and receiving evacuees during an emergency
- Partnering with the KY OIG to provide preparedness training to state LTC and state survey staff
- Program integration with all HPP regional health care organizations
- Development of emergency exercise scenarios for LTC tabletop exercises and HPP regional health care coalition community exercises
- Providing 24/7 situational awareness for the state health operations center during emergencies involving LTC
- Participation in state-level policy committees focused on emergency preparedness and response

## **Conceptual foundation/theory**

The conceptual foundation/theory chosen to assess the process of diffusion, adoption and implementation of emergency preparedness of KY LTC is Everett Rogers' Diffusion of Innovation Theory (Rogers, 1995). Diffusion of Innovation (DOI) research has been applied widely to many different fields of innovation. A meta-analysis undertaken by Greenlaugh et al. (2004) found thirteen different disciplines with a research tradition of diffusion and adoption literature. In addition, research also included adoption of technological innovations and health care (Peeters, JE de Veer, van der Hoek, & Francke, 2012), farming (McGrath, & Zell, 2001), banking (Gopallakrishnan, Wischnevsky, & Damanpour, 2003), intervention research in third world countries (Pandey & Yadama, 1992), public health (Katz, 1963; Haider & Kreps, 2004), health promotion (Ferrence, 2001), drug prevention (Pankratz, Hallfors, & Cho, 2002), and counseling (Murray, 2009) among many others. Its application to LTC emergency preparedness provides constructs with which to assess elements of diffusion of LTC preparedness as an innovation, adoption of core preparedness elements mandated by CMS prior to 2016 and the implementation of voluntary comprehensive preparedness across KY LTC. Diffusion theory has been selected to also identify and explain pathways of communication that have been effective for KY LTC in learning about the innovation, hearing from peers as to its usefulness in emergencies, becoming familiar with resources that represent best practices, connecting with established HPP regional health care coalitions of response partners, and ways to test facility plans for continuous improvement.



### ***Diffusion of Innovation Theory***

Diffusion of innovation theory (DOI) was developed by Everett Rogers in 1962. It was first applied in agricultural research and hybrid seed corn use; and today is one of the most widely applied theories across a wide range of fields of study such as agriculture, anthropology, technology, medicine and healthcare, public health, community development, marketing and management (Rogers, 2003). Its roots derive from Gabriel Tarde, one of the fathers of sociology and social psychology who studied attributes that influence adoption of new ideas and explained the ones that were successful and unsuccessful.

Diffusion of innovation theory is applicable to understanding the processes of the passive spread (diffusion) of an innovation, adoption or acceptance of *an innovation* which is defined here as a new idea, process, technology or application and the implementation of actual practices in an organization which produces a change to the culture of the organization. It helps to explain a new idea as it is being applied. It can also be used to bring greater awareness to the communication mechanism between and among the parties involved in the process.

Most innovations, especially prevention focused changes (Rogers, 2003, p.234), take substantial *time* to diffuse sufficiently across a social system in order to create social change. Some innovations take less time as they create new programs, products and processes heretofore not used. Prevention-focused changes take more time because adopters are changing existing systems that have been in place for long periods of time. The time factor in the rate of diffusion can delay or impede its adoption.

A final critical element in diffusion of innovation theory is the *social system* itself that is experiencing the adoption process. The size, structure, scale and nature of the social system can encourage or impede adoption of the innovation as “users may not be the choosers” (Dearing, 2009). In long term care, the adopters would likely be administrators, leaders with the influence to direct facility resources and staff in this new direction. In many cases, the person delegated with the responsibility to implement comprehensive preparedness serves in another role in the facility such as the director of nursing, facilities manager, activities director, etc.

This study will assess communication strategies facilities utilized for education, training, and use of preparedness skills. It will also assess degree of adoption of and compliance with mandated requirements from the state and CMS and, finally, assess degree of implementation of the voluntary elements of comprehensive planning derived from lessons learned and best practices of other state plans.

#### ***Attributes associated with innovation adoption***

Rogers found that five perceived attributes of innovations account for 49-87% of the variance in the rate of adoption: relative advantage, compatibility, complexity, trialability and observability (Rogers, 1995). *Relative advantage* suggests that the innovation needs to be clearly better than the process or product it replaces. Its application to organizational analysis of adoption has been reported by Pankratz, Hallfors and Cho (2002) as the primary attribute distinguishing organizational decision-making to adopt or not. An example from Long Term Care (LTC) is clearly illustrative of this key attribute. The previous minimal standards of the Centers for Medicare and Medicaid Services (CMS) were replaced by the new recommended CMS “guidelines for long term care emergency

preparedness” and coincided with the development of the *KY All Hazards LTC Planning and Resource Manual*. The advantage of the manual over current CMS requirements is that it incorporates the best practices from twenty other state plans, LTC facility plans and trade association recommendations and expands on the CMS guidelines to provide a complete emergency planning tool for long term care to adopt and implement. Facilities that implement the manual will meet and exceed CMS recommended standards in a user-friendly, comprehensive format by using the “crosswalk” incorporated in the *KY All Hazards LTC Planning and Resource Manual* that identifies the CMS recommended guidelines matched to exact pages in the manual. Relative advantage provides a tangible benefit that may be quantified, in this case by monies saved by effective mitigation and preparedness.

*Compatibility* refers to the degree to which the innovation is compatible with potential adopters’ experiences, values and needs. And, is it better than the preparedness long term care used before the innovation of comprehensive planning. (Rogers, 2003; Greenhalph et al, 2004). Pandey and Yadama’s study of adoption of improved cookstoves in Nepal (1992) found knowledge about the cookstoves had modest effect compared to the compatibility with cultural practices.

Referring to the above LTC example, the *KY All Hazards LTC Planning and Resource Manual* was specifically designed in collaboration with input from LTC facility leadership from the two KY state LTC associations. It incorporated their needs and experiences and is compatible with the values of long term care as opposed to overemphasizing the values of the incident response network or the militaristic tone so common to FEMA materials. Initial emergency preparedness manual development was

drawn from review of over 20 different state, local and agency plans related to long term care. The best ideas were applied from each plan to reflect the best practices in the field to-date. The KY state long term care associations' input added subjective content that enhanced the manual's application to the culture and needs of Kentucky long term care facilities.

The *complexity* factor speaks to the ease of use of the innovation. As applied here to long term care, the *KY All Hazards LTC Planning and Resource Manual* was written using language that is meaningful to long term care providers and services. It bridges the requirements of the FEMA standards derived from the experience of firefighters and the military to easy and ready application by long term care.

*Trialability* relates to the degree to which potential adopters can experiment with and even revise the product or process to meet their unique needs. The *KY All Hazards LTC Planning and Resource Manual* can be used in chapters or sections and is in electronic format so facilities can use any or all of the content to adopt or integrate with an existing plan. An electronic version of the entire manual is available on the KYEPA website and a CD was available in the back of the manual so facilities could make use of any or all of the material.

*Observability* refers to the tangible and physical evidence of the innovation in use and its impact. In the case of the KY LTC, it is best illustrated by observations made during the early training process. It was apparent in training events that include panels of LTC facility users that non-users responded best to first-hand reports of the benefits of the innovation from their peers increasing the likelihood they would adopt the innovation. Active facility users of the manual were incorporated in all of the training events. They

sat on panels and shared their experience with adoption of the *KY All Hazards LTC Planning and Resource Manual* and gave first-hand experience as to how it assisted in their facility response and recovery in current disasters. These panels of peers provided the opportunity to observe (*observability*) how actual adoption and implementation of comprehensive emergency preparedness can benefit a long term care facility. In the end, they proved to be the single most persuasive element in increasing the diffusion of innovation process. In addition, when LTC facilities participated in on-site or regional disaster exercises, they could observe other LTC and first responders in application of the same principles/practices.

### ***Factors influencing Diffusion of Innovation***

*Time* is a critical factor in the diffusion of innovations. The diffusion process is cumulative over time and the decision process within the organization or adoption unit also varies in time. The degree of knowledge and persuasion preceding the adoption decision takes time. Time can also frustrate diffusion of innovations. In KY, LTC had opportunities for frequent repetition of the emergency preparedness process through multiple training offerings each year. Facilities could “try on” the minimal actions required by regulation or statute until they voluntarily put a comprehensive infrastructure in place. In theory, different actors in the communication process need time to integrate the information about the innovation and to communicate their attitudes about it to others or receive opinions from others. The rate of adoption is measured in time as the organization adopts, revises and maintains the innovation. Rogers found the distribution of adopters is cumulative over time and will rise in an S-shape curve. Innovators and early adopters are

few and the early majority and late majority adopters make up the bulk of the increase with a slight plateau for laggards (Rogers, 2003).

*Communication channels* are critical to the innovation diffusion process. The nature of the communication between two persons about the ease of use and utility of the innovation can determine whether it gets adopted or rejected as well as the rate of adoption. The research on diffusion of innovation has found that the decision to adopt is less about the actual qualities of the product/process and more about subjective assessment by peers and champions of the innovation. The degree of interpersonal communication that occurs about the innovation and the types of communication used by change agents can impact the rate of adoption. Change agents are invested in bringing the innovation to the potential users. In Kentucky, the KYEPA program has been a change agent, supported by the KY Department for Public Health and the KY State Survey Agency. Feedback from attendees of the training workshops reported that attending training with other long term care staff (especially safety committee staff) made a difference in their degree of enthusiasm to take the *KY All Hazards LTC Planning and Resource Manual* back to the facility and begin using it in their safety committees and management team. The same process was used with the development of a KY Incident Command System (ICS) training curricula for long term care so facilities could become certified in ICS levels 100, 200, 700 and 800. Facilities that attend group training were apt to integrate ICS into their preparedness planning. The materials were also incorporated into the KY bi-annual Emergency Preparedness for Aging electronic newsletters as well as in newsletters published by the two state long term care associations and the KY Office of Inspector General. It is difficult for a LTC facility in

Kentucky to not be exposed to the *KY All Hazards LTC Planning and Resource Manual* and the ICS information by peers and the key organizations that influence their work.

The characteristics of *the social system* and its norms are important variables in the rate of innovation adoption. The rate may differ based on differences in the size or location and norms of potential adopter (Rogers, 2003). Norms may differ between urban long term care facilities and rural facilities because urban facilities have access to more resources and expect a ready response. They can be less inclined to collaborate with the HPP regional health care coalitions. Rural facilities depend on the cooperation of others in the community as a cultural norm and be more inclined to participate in HPP regional health care coalitions or be more self-sufficient and less inclined. Prior to the KYEPA program, inaction was the norm across long term care facilities' preparedness in Kentucky.

Real change occurs in the social system when ownership of the innovation shifts from change agent to opinion leaders, i.e. long term care stakeholders and facility administrators and staff who champion the benefits of adoption to others in the social system. The dominant change agent is and will continue to be CMS. As their expectations in the form of regulation has been limited, so has adoption.

Opinion leaders within the social system can have significant influences on the rate of adoption because they tend to operate within the adopting organization and can influence decisions due to shared compatibility with organizational norms (Rogers, 2003). In the case of Kentucky long term care, opinion leaders also include the KY state LTC associations as they have a major role in the establishment of norms. The degree of interconnectedness among members of these state associations is very high in Kentucky and their influence cannot be understated. If they incorporate emergency preparedness in

conference session topics or provide emphasis by sponsoring specific training, diffusion of the usefulness of preparedness leads to adoption which can lead to implementation.

### ***Types of Innovation Decisions***

There are three types of innovation decisions: *optional*, *collective* and *authority-based* decisions. *Optional* decisions are made by an individual independently of the rest of the organization. In Kentucky's case, for instance, there were three long term care facility administrators and one director of nursing, two in the eastern half of the state and two in the western half, who saw the value of emergency preparedness and how their facility could benefit from participating on the HPP regional health care coalitions. These champions got involved in the early days of their coalitions and became leaders in their regions and their state LTC associations. Their decisions to adopt were made as individuals, not because of promotion from a state association or emergency response agency. They were able to take advantage of grant monies early for their facilities and, therefore, be better prepared.

*Collective* decisions to adopt are based on a consensus decision-making. In some Kentucky facilities, for example, the consensus was that preparedness beyond minimum requirements of quarterly fire drills was unnecessary because they would simply take the residents to the local hospital. Those facilities have learned some hard lessons as they discovered that the hospitals planned to discharge patients to LTC during an emergency and, in some cases, refused to receive LTC residents during a life-threatening event. It became clear that if LTC needed to evacuate to other health care locations, relationships needed to be established, mutual aid agreements and memoranda of agreements needed to be developed to integrate LTC needs and resources into the health care provider/responder mix.



*Authority-based* decisions to adopt or reject are decisions made by a few individuals in an organization based on their position of power or status. Authority figures do not always view the investment of time and effort of value relative to the effort. And, emergency preparedness takes effort. In some cases, administrators did embrace the importance of preparedness and maintained leadership. In other cases, the job was delegated to environment/maintenance/facility managers. In others, it was delegated to nursing, dietary, or social services for example.

### ***Stages of the Innovation-Decision Process***

Stages of innovation decisions are ultimately about individual and organizational behavior change. Rogers (2003) asserts that an individual moving from a change in knowledge about an idea to behavior change is a cumulative process. Different communication channels impact the rate of change to differing degrees. Knowledge change is easier to achieve than behavior change.

For Rogers, the *knowledge stage* involves the potential user gaining knowledge of the innovation and how it functions. This stage can be impacted by the characteristics of the organization and the decision-maker, such as education, socioeconomic status, openness to new ideas, engagement with other like persons both inside and outside the organization. Next, the individual moves through the *persuasion stage* as they hear about the new idea, product/process or behavior from others and develop a positive attitude stance towards using it. This is the stage where the social system acceptance or rejection of the innovation frames the individual moving to the decision stage or not. In the *decision stage*, the potential adopter intends to explore additional information about the innovation

and sets the intention to actually put the behavior in place, or “adopt” the behavior. The decision to accept the innovation or reject it is a product of the decision stage.

The *implementation stage* occurs when the innovation is actually adopted and put into place followed by a period of “creating fit” through integrating new learning as the adopter organization uses the innovation. The *confirmation* stage occurs when the user experiences tangible benefit from using the innovation and it becomes integrated into the organization’s ongoing work. Use of the innovation is absorbed and maintained by the organization and it no longer feels like a new idea. Change is institutionalized. Interpersonal communication to others outside of the organization occurs and the innovation is diffused to other organizations.

### ***Characteristics of Adopters***

Rogers devised his categorization of adopter categories when he was a doctoral student at Iowa State in 1958. His criteria are premised on innovativeness, the “degree to which an individual or other unit of adoption is relatively earlier in adopting new ideas than other members of a social system” (Rogers, 2000). His research found a normal distribution curve supported categorization into five categories: *innovators* (2.5%), *early adopters* (13.5%), *early majority* (34%), *late majority* (34%) and *laggards* (16%) (Rogers, 2003).

*Innovators* are the most willing to be exposed and they can be viewed as outliers within their social system. Innovators can deal comfortably with the uncertainty of new ideas and how their use in the system may or may not be accepted. They bring the new idea to the organization, are open to their failure and still are willing to continue to bring other new ideas.

*Early adopters* are less the outlier and more the voice within the organization/social system that others look to for use of existing methods and new ways of doing things. Early adopters may be the opinion leaders and are sought out for input about the innovation. They may be more interconnected within the organization across management and line staff as well as outside of the organization with state associations (i.e. state associations of nursing or long term care). This category of adopter is thought to be better-educated, more cosmopolitan and even considered to be a community leader (Rogers, 2003).

The *early majority* may not have status within the organization; however, they hold a key role in moving the innovation further towards its use. They tend to follow the early adopters and become positive about the merits of the innovation. They are a linchpin in the interpersonal communication process about the innovation.

The *late majority* maintain system norms. Hence, they are not risk takers and are skeptical of change. Their skepticism needs to be addressed to minimize the risk of them expending energy sharing a negative opinion of the innovation. However, they are more willing to adopt an innovation if the evidence is convincing that the innovation has value.

The *laggards* are last to adopt an innovation. Their process for innovation adoption is very lengthy due to their resistance to new ideas (Rogers, 2003).

Diffusion of Innovation theory has been criticized for its “pro-innovation bias” due to the claims that research often is funded by change agents with a vested interest in the research outcomes, the retrospective nature of the research, the research evaluates only innovations that have been successfully adopted and/or the research has only focused primarily on innovations that spread rapidly. This study is retrospective, does not evaluate the success of the adoption rather assesses useful pathways to adoption and implementation

and, in the years between the innovation and the CMS Final Rule, spread of the innovation has required consistency of diffusion over ten years given the complexity of preparedness planning and the frequency of LTC staff turnover (Laditka et al, 2006).

Research on application of DOI theory as stated earlier crosses many disciplines. In a study of adoption of solar water heaters in China (Sereenonchai, Arunrat, Xu , & Yu, 2017) found that the most influential drivers for adoption were social influence, physical need, innovation attributes, income, communication channels, size, awareness, government policy and education in that order.

Dearing, Beacom et al., (2017) undertook a study of Canadian long term care organizations' diffusion and adoption of resident care best practices. They identified those sources of advice-giving organizations, groups or individuals most utilized in decisions to adopt new practices. Results identified that inter-organizational relationships had greater impact than interpersonal relationships and in many cases the health authorities or subject matter experts were more influential than expected. Proximity to the opinion leaders (individuals and organizations) was more important than cross-provincial or national networks. Social modeling from peers or organizations proved a powerful influence as well.

The impact of manipulated versus voluntary adoption has been addressed by Gayadeen and Phillips (2014) in their work on diffusion of community policing incentivized by federal grants. Results found that diffusion and adoption can be hastened with financial incentives and political incentives. Initially, KY LTC did not respond to financial incentives. Awareness of the impact of comprehensive change of CMS and state regulations in the follow-up studies, may provide diffusion pathways to all category of

adopters for future adoption lessening the impact of time. The remaining question is how to identify the degrees of implementation.

## CHAPTER III

### METHODOLOGY

#### **Purpose of study**

The purpose of this research was twofold. The first was a description of the status of long term care emergency preparedness based on survey responses from long term care facilities by analyzing their emergency preparedness plans; emergency training received by staff; emergency training exercises undertaken in their facility and HPP health care coalition region; resources outside their facilities they have utilized, and their needs for additional training. The description was also to provide information on how diffusion of the innovation occurred-- through preferred training sponsors/providers and identification of how LTC facilities heard about the best practices as well as suggestions on the different communication pathways LTC facilities have used to gain information and knowledge about the innovation.

The second purpose was to identify factors related to the adoption of emergency planning practices recommended or required for long term care facilities. Specifically, the focus was to assess implementation of the innovation by tracking the voluntary implementation of preparedness measures which exceeded existing regulations at the time of the study. The factors that are suggested are from a widely used analytical model developed by Everett Rogers and described in his book "Diffusion of Innovations" (Rogers, 2003). His work has been widely used to analyze factors that influence adoption of farming practices, medications, new technology, banking practices, and public health

among others. In this study, the analysis included: characteristics of long term care facilities, chief administrators; range of staff with significant knowledge of emergency planning, relationships with HPP regional health care coalitions, sources of additional training, participation in local, regional and state emergency exercises; and use of resources outside the facility.

The research questions explored in this study were:

1. What is the profile of Long Term Care (LTC) facilities participating in emergency preparedness planning?
2. What is the profile of representatives/leadership of LTC facilities participating in emergency preparedness planning?
3. In LTC facilities' emergency preparedness plans, what are the current planning elements?
4. Are LTC facilities aware of a) recommended best practices and guidelines and b) what methods of communication and sponsors of training did they use?
5. Are LTC facilities a) utilizing any of the recommended best practices and b) CMS guidelines for their emergency preparedness plan and, c) what specific potential emergencies and disasters are addressed?
6. Are LTC facilities discussing emergency preparedness planning and coordination with other community organizations?
7. How prepared operationally are LTC facilities to manage a no-notice emergency or disaster?

8. How prepared are LTC facilities to manage: a) a no-notice evacuation of residents from their facility in case of an emergency or disaster? , and b) to host evacuees from another institution/health care facility?
9. What experience do LTC facilities have with emergency preparedness training and drills/exercises?
10. Are there any regional/geographic, facility size differences in regards to emergency preparedness plans? (i.e. elements of plan, specific potential emergencies and disasters addressed, awareness and utilization of recommended best practices and guidelines, engaging community organizations, facility operations, evacuations, and experiences with training, drills/exercises).
11. Are there any regional/geographic, facility size differences in emergency preparedness planning in regard to Rogers' Diffusion Innovation Theory related to adoption and implementation?
12. What is the overall readiness of KY LTC for a no-notice emergency event?

### **Study variables and measures**

The study dealt with Kentucky's long-term care system, particularly facility personnel who are involved in planning and training facility staff for serious emergency events. The study attempted to identify the range of personnel who are key participants in these activities and depth of their participation. It is generally believed that the more types of staff roles involved in preparedness leadership and the greater their exposure to training and emergency exercises, the better the plan and more effective the facility will be able to



respond in emergencies. However, anyone who has worked in a LTC facility realizes there are many demands on staff time, especially those at the managerial and supervisory level. What people would like to do and what they can actually do can be much different, especially when it deals with preparing for events that are sometime in the future and not as pressing in common day-to-day activities that never seem to end.

At a minimum, an Emergency Preparedness Plan should cover the key areas required by The Centers for Medicare and Medicaid Services and Kentucky State Statutes. In addition, best practices go far beyond minimum compliance and these are included in the *Kentucky All Hazards LTC Emergency Planning Manual*. The study used the following items as the most important to track for the quality of facility's emergency plan, which will be called Implementation for purposes of this study. Implementation moves beyond Compliance, in this case we call it adoption, and captures best practices as identified at the time of the survey including: a facility specific hazard vulnerability analysis, sections that covered responsibilities and tasks for a wide range of potential hazards, sheltering-in-place, emergency evacuations and a evacuee surge inflow from evacuating health facilities. It is generally recommended that an emergency plan should cover these items including what tasks should be carried out and by whom and who has authority to make what emergency response decisions. At the time of the survey, any item beyond compliance was voluntary and marks a facility's investment of resources in site-specific emergency planning.

The degree of emergency preparedness training was assessed by tracking the number of different trainings and the range of organizations providing the training. It is important for a facility's emergency preparedness leadership to engage in this training because it is the portal to knowledge about the innovation. It is often the opportunity to

establish relationships with peers and first responders, learn about the best communication methods with outside emergency management, and learn about who is responsible for what in an emergency. Quality of preparedness is based on the generally accepted assumption that the more types of training team members complete (range), the better the facility plan and the more prepared a facility will be to deal with serious emergency events.

Information about the numbers and sponsors of exercises that are completed by a facility was also collected. Some exercises are carried out within the facility emergency planning team such as the hazard vulnerability analysis. Others are facilitated and sponsored by external preparedness and response partners, where a community group simulates an emergency and “walks” through the completeness of their response relative to the exercise scenario. Whatever is lacking in the plan is added to the emergency plan. Team members also may participate in regional (county, multi-county or state areas) exercises. Exercises related to sheltering-in-place, emergency evacuations, or client surge inflow usually involve additional staff in a facility. Again, the quality of facility preparedness is generally believed to be better the more a facility conducts different type of exercises (range) and makes improvements to their plan.

There are certain factors that are related to the adoption of innovation or new practices. Some of these are taken from Rogers (2005). Rogers research found that chief administrators with more education and more involvement with regional, state and national networks tend to be early adopters and more likely to experiment with new concepts. The study tested whether their leadership contributes to greater adoption and implementation. More recent research findings that Rogers has conducted with researchers from academic management programs also indicates organizations that go through a process of reviewing

new information and adapting it to their specific organizations are much more likely to adopt and retain new practices. Their work indicates that this organizational review process by a group of facility team members is very important to the adoption process. There are a few questions about this in the survey instrument specifically about adoption of *the KY All Hazards LTC Planning and Resource Manual* and the estimated percentage of adoption of the manual at the time of the survey.

Experience with the emergency preparedness and response network indicates that any facility that wants to develop an effective response to emergencies must be aware of the local emergency managers and how they can assist in different emergencies as well as how they can help facilities plan and train for emergencies, particularly those facilities vulnerable to significant hazards. This is related to another area covered in the survey. Respondents are queried in several places if they have established relationships with emergency managers and other sources during emergencies, preparing emergency plans, facilitating a wide variety of training as well as on-site, local, regional and statewide exercises. This engagement with partners adds to the depth of a plan, effective response during an event and enhanced life safety of residents.

The survey was based on earlier work done by Eiring, Blake and Howard, (2012) and incorporated elements of the KY Hospital Preparedness Program.

**Illustration 3.1** lists items in the order they are covered in the survey:

Facility Profile

- # of residents in each service (licensed bed size)
- Location and type of community (urban/rural, eastern/western region);
- Type of ownership (for-profit vs. non-profit/governmental)

### Respondent Profile

Years working (overall experience in LTC, position experience & stability in same organization, same position)  
Network organizations (local, state, national)  
Network contacts (state, regional, local)  
# Emergency preparedness meetings in 5 years

### Facility Emergency Experience

Prior experience with evacuation  
Prior experience with medical surge

### Disaster Plan

Awareness of *KY All Hazards LTC Emergency Preparedness Manual*  
Used any of it/how much it  
Completed Hazard Vulnerability Analysis  
Identified types  
Developed emergency plan to degree of hazard risks  
Community contacts/procedures covered in plan  
Have on-site generator (type of fuel & more for emergency fuel)

### Training in Emergency Preparedness

Emergency Preparedness Team role (job title)  
HPP Regional health care coalition training experiences  
Training needs  
Type needed, if any

### Work with County Emergency Manager/Preparedness Partners

Completed Mutual Aid agreements and MOU/MOAs with the HPP regional health care coalition, its members, and/or other LTC  
Communication with key groups  
Evacuation sites and transportation resources

### **Sample selection**

Sample selection reflected the ongoing challenge of ensuring reasonable response rates from LTC facilities through both electronic and direct mail communication. Nursing facilities in Kentucky at least have been a challenge as a group to respond to direct mail or electronic mail. In the early days of the KY Emergency Preparedness for Aging & LTC Program, a LTC administrator offered what turned into good advice, “we do not take calls, open mail or e-mail unless we know the person”. As a result, the KY Emergency

Preparedness for Aging & LTC program made extensive efforts to establish relationships such that, if an e-mail was sent, it received a response in the program's role as first responder for LTC to the KY Department for Public Health.

The survey sample used a purposive method identifying the LTC facilities likely to have had exposure to preparedness planning and be knowledgeable about their facility's plan. Sign-in sheets from previous trainings, meetings or exercises facilitated by preparedness partners were used to collect contact information. An e-mail was sent in advance to let the recipient know to expect an invitation to participate in the survey. Finally, a letter of invitation was sent by e-mail announcing the survey with the link to the Qualtrics site to complete the survey.

### **Data collection**

Ninety-one nursing facilities out of 284 were sent invitations through e-mail with links to the survey on Qualtrics and a separate consent form. Multiple invitees within LTC facilities were sent e-mails due to employee turnover rates in LTC facilities. Follow-up requests to participate were e-mailed at six weeks, eight weeks and ten weeks after the initial request. The invitation requested that the survey be completed by the person with the most knowledge in the facility about its emergency plan.

### **Consent Procedures**

The study used a Preamble consent which was included in the link to the survey on Qualtrics as a separate form with a forced response of yes or no. All respondents indicated they accepted the consent prior to their inclusion in the sample.

## RESULTS

### **Response rate**

Ninety-one long term care facilities were sent the survey questionnaire. Responses were received from 69 facilities (75.82% return rate). Data cleaning involved eliminating multiple respondents from the same facility, duplicate responses from the same respondent, and incomplete surveys (i.e. where respondents simply completed the facility name or their years of experience). Ultimately, the final sample of 50 LTC facilities was used for all analyses (54.94% of the 91 facilities that were sent surveys; 72.46% of the 69 facilities that returned surveys). Sample sizes were compared to state data for region, geography and bed size with results indicating representativeness to LTC facilities across the state. Type of ownership was not compared due to lack of access to state data on this particular variable.

### **Data analysis approach**

There was two parts to the analysis. The first part used descriptive analysis to assess representativeness of survey responses to all long term care facilities. Long term care facilities were collapsed into regions (East/West), urban and rural locations, bed size, ownership type and respondent job title and responding facilities were grouped in similar manner. In addition, the descriptive analysis also identified the communication methods used by LTC facilities to gain knowledge about diffusion innovation. The second part of the analysis consisted of using inferential statistics to identify factors related to the adoption and implementation of emergency management practices.

## **Response to research questions**

### **Q1: What is the profile of Long Term Care (LTC) facilities participating in emergency preparedness planning?**

Kentucky is primarily a rural state with four Standard Metropolitan Statistical Area located in the Louisville-Jefferson County, Lexington, Paducah-Mayfield, and seven counties in Northern Kentucky. The geographic representations have been collapsed further into Eastern and Western regions with Louisville and Western Kentucky making up the Western portion and the Eastern region comprised of Lexington/Northern/Eastern Kentucky making up the East region. As can be seen in Table 2, sixty-eight percent (n=34) of the respondents were from facilities located in the western half of Kentucky and the other twenty-eight percent (n=16) were from facilities located in eastern part of Kentucky (see map). Fifty percent (n=25) of the facilities were located in urban counties and the other fifty percent (n=25) were in rural counties. Facility bed size ranged from under-50 beds (12.0%), 50 to 99 beds (50%), 100 to 149 beds (32%), and over-150 beds (4%). Sixty-two percent (n=31) of the facilities' bed sizes ranged from 1-99 while only 36% (n=18) of the facilities' bed size was 100 or more beds. Lastly, the majority of the facilities (62.0%, n=31) were for-profit institutions of long term care.

These categorical comparisons reflect equivalence to KY LTC except for east (n=16) versus west (n=34) because of the difference in sample size. The western facilities include a sampling bias due to the disproportionate representation by Louisville-based facilities (22%); however, this bias provided an equal percentage of urban and rural LTC in the sample.

**Table 2: Profile of Sample Characteristics**

| <b>Facility Characteristics</b> | <b><u>N</u></b> | <b><u>%</u></b> |
|---------------------------------|-----------------|-----------------|
| <b>Bed Size</b>                 |                 |                 |
| <50 beds                        | 6               | 12.0%           |
| 50-99 beds                      | 25              | 50.0%           |
| 100-149 beds                    | 16              | 32.0%           |
| 150+ beds                       | 2               | 4.0%            |
| <b>Bed Size Collapsed</b>       |                 |                 |
| 1-99 beds                       | 31              | 62.0%           |
| 100+ beds                       | 18              | 36.0%           |
| <b>KY Region</b>                |                 |                 |
| East                            | 16              | 32.0%           |
| West                            | 34              | 68.0%           |
| <b>Geography</b>                |                 |                 |
| Urban                           | 25              | 50.0%           |
| Rural                           | 25              | 50.0%           |
| <b>Ownership</b>                |                 |                 |
| For Profit                      | 31              | 62.0%           |
| Non-Profit and Governmental     | 19              | 38.0%           |



**Q2: What is the profile of representatives/leadership of Long Term Care (LTC) facilities participating in emergency preparedness planning?**

Long Term Care (LTC) facility administrators were asked to select the person with the greatest knowledge of the facility's preparedness to complete the survey. In practice, the administrator very often appoints another manager to chair the "safety" committee or "preparedness" committee. Typically, those appointed are managers who attended trainings and HPP regional health care coalition meetings and/or LTC subcommittee meetings represented all areas of responsibility within the facility. The managers participating and completing the survey were administrators/ assistant administrators (44%, n =22), director of nursing (10%, n=5), facility manager (14%, n=7) and other (30%, n= 15) which included assistant director of nursing (2.0%), corporate representative (2.0%), executive assistant ( 2.0%), human resources (4.0%), risk management (2.0%) and social services (2.0%).

Facility managers had been in their current position on average the longest (mean=9.09 years, SD = 6.07) and the Director of Nursing the fewest number of years (mean =5.25, SD = 2.82); although not surprisingly, administrators/assistant administrators had been working in the long term care industry on average more than twice the amount of time (years) of other categories of managers participating in emergency preparedness planning. It bears exploration to examine differences between facility manager and administrator scores for implementation. Administrators have ultimate responsibility for compliance items as there are monetary sanctions attached while voluntary elements can be naturally championed by other managers.

**Table 3: Respondents' Characteristics**

|  | <u>N</u> | <u>%</u> | <u>Mean</u> | <u>SD=</u> |
|--|----------|----------|-------------|------------|
| <u>Administrator/Assistant Administrator</u> | 22       | 44.0%    |             |            |
| Years in LTC *                               |          |          | 25.14       | 9.29       |
| Years in the LTCF**                          |          |          | 12.34       | 9.57       |
| Years in Current Position                    |          |          | 8.21        | 8.10       |
| <u>Director of Nursing</u>                   | 5        | 10.0%    |             |            |
| Years in LTC                                 |          |          | 10.08       | 5.80       |
| Years in the LTCF                            |          |          | 6.58        | 4.67       |
| Years in Current Position                    |          |          | 5.25        | 2.82       |
| <u>Facilities Manager</u>                    | 7        | 14.0%    |             |            |
| Years in LTC                                 |          |          | 11.95       | 6.50       |
| Years in the LTCF                            |          |          | 10.09       | 5.71       |
| Years in Current Position                    |          |          | 9.09        | 6.07       |
| <u>Other</u>                                 | 15       | 30.0%    |             |            |
| Years in LTC                                 |          |          | 12.66       | 10.00      |
| Years in the LTCF                            |          |          | 7.72        | 4.35       |
| Years in Current Position                    |          |          | 5.51        | 2.96       |

\* LTC = Long Term Care

\*\*LTCF = Long Term Care Facility

**Q3: What are the current elements in LTC facilities' emergency preparedness plans?**

In 2014, there were very few specific emergency preparedness-related federal or state regulations. The emergency events that were addressed by federal and state regulation pertained to fire, power outage, and sheltering-in-place needs for a minimum of 2-3 days (KY). Specifically, required elements for LTC facilities in 2014 included: a written fire response plan incorporating quarterly fire drills; sprinkler systems; emergency doors and lighting. The “mandated” emergency plan had few details and required the facilities have

a back-up generator capable of powering emergency lighting in hallways and the “red” outlets in each room. These outlets carry electric current in emergency situations for items such as oxygen, ventilators, etc. Additionally, an evacuation plan to an alternate care site was required and plans that addressed response during power outages and water emergencies.

Kentucky regulations are greater than many other states and fewer than the coastal, hurricane-vulnerable states. Kentucky’s requirements include: staffing plans in the event of an emergency, identification of individual resident needs during an emergency, a system to contact staff in the event of an emergency requiring additional staff, surplus emergency supplies for at least 2-3 days, back-up power with fuel for a minimum number of days, medications sufficient to meet the resident needs, and records of all training attended by staff to be kept up-to-date and on the premises. The following table displays the current elements reported by respondents representing long term care facilities across the state of Kentucky.

---

**Table 4. Current Elements in LTC Facilities' Emergency Preparedness Plan**

---

|  | <u>N</u> | <u>%</u> |
|--|----------|----------|
| Does your facility have a comprehensive emergency preparedness plan?   | 46       | 92.0%    |
| Does your facility have an evacuation plan to an alternate care site?  | 37       | 74.0%    |
| Does your facility have a communication plan in place for disasters?   | 46       | 92.0%    |
| Transportation contracts in the event of an evacuation                 | 28       | 56.0%    |
| Have a system to communicate with staff during an emergency            | 46       | 92.0%    |
| Have a central place to capture characteristics and needs of residents | 34       | 68.0%    |
| Water for 2-3 days   | 46       | 92.0%    |
| Food 2-3 days  | 47       | 94.0%    |
| Does your facility have an on-site emergency generator?                | 47       | 94.0%    |
| Generator covers air conditioning                                      | 28       | 56.0%    |
| Generator covers heat  | 33       | 66.0%    |
| Generator covers emergency lighting                                    | 47       | 94.0%    |
| Generator covers critical care of residents                            | 42       | 84.0%    |
| Generator fuel supply 2-3+ days  | 31       | 62.0%    |
| Contract with fuel vendor  | 36       | 72.0%    |

Nearly all of the respondents (92%) reported that their facility had a comprehensive emergency preparedness plan, including having food (94%) and water (94%) for 2-3 days, an onsite emergency generator (94%) which covers emergency lighting (94%). These items are among the required elements for preparedness and resident care by both federal and state regulations. Fewer respondents (56%) reported voluntary measures such as existing transportation contracts in the event of an evacuation or generator supported air conditioning (56%) as part of their emergency preparedness plans and contracts with fuel vendors (72%). The hurricane experience in Florida in the summer of 2018 pointed out the critical nature of these items as residents died as a result of no air conditioning and/or inadequate transportation planning.

**Q4: Are LTC facilities aware of a) recommended best practices and guidelines? and b) how did they become aware?**

At the time of the survey, there were only minimal requirements to be included in an emergency plan. Minimum best practices include those items in current CMS Life Safety and Preparedness regulations. Little is spelled out with specificity for what defines preparedness within these regulations. The arbitrary nature of the regulations leave LTC to fill in the blanks on their own.

In order to develop a comprehensive emergency plan, LTC had to find state and corporate plans or attend training provided by the state associations. The *KY All Hazards LTC Emergency Planning and Resource Manual* incorporated guidance and practices from over twenty state plans, county plans and individual facility plans from across the country. This manual was designated as the “best practice” for long term care preparedness

by the Office of the Assistant Secretary for Preparedness and Response (ASPR) of the Department for Health and Human Services (DHHS).

In addition, the Office of Inspector General of the Centers for Medicare and Medicaid funded a study following the hurricanes Katrina and Rita (2007) that identified gaps in preparedness planning for and implementation of preparedness and response plans. A follow-up study (2010) was also funded and found fewer facilities followed their plans or had effective plans than the 2007 study. CMS issued “recommended guidelines” for preparedness planning in 2007 after the initial report and revised them in 2010. These guidelines were voluntary and added items to best practices that had never been considered.

The *KY All Hazards LTC Planning and Resource Manual* covered three major preparedness categories and responses represented facility use of each category: 1) hazard vulnerability and response templates based on each of 17 hazards (60.0%), 2) facility operations (60.0%) and, 3) employee personal readiness (52.0%). Additionally, the Centers for Medicare and Medicaid Services issued *Recommended Guidelines for Emergency Preparedness*. The guidelines represented an expanded list of practices for emergency preparedness. CMS issued a set of voluntary guidelines to mitigate the impact of severe hazards to life safety as organized in five over-arching topics.

Awareness of the *KY All Hazards LTC Planning and Resource Manual* was positively reported by forty-two of fifty respondents (84.0%), and the primary method of education about the manual was through training provided by the KY Emergency Preparedness for Aging & LTC Program (54%) followed by the state LTC associations (28%), the HPP regional health care coalitions (22%) and the KY OIG (8%). Surprisingly, respondents did not become aware of the *KY All Hazards LTC Planning and Resource*

*Manual* from peers (8%) rather from change agents. This is a departure from Rogers' definition of diffusion which views communication among peers as the most powerful means of spreading an innovation. Awareness of the CMS recommended guidelines was reported by 96% (N=48) of respondents but there was not a specific survey question to be able to cite the source of their knowledge. The recommendations were included in the *KY All Hazards LTC Planning and Resource Manual* accompanied by a crosswalk for staff to find the planning tools for each recommended item.

**Q5: Are LTC facilities a) utilizing any of the recommended best practices and b) guidelines for their emergency preparedness plan and, c) what specific potential emergencies and disasters are addressed?**

Best practices included in the *KY All Hazards LTC Planning and Resource Manual* and the CMS recommended guidelines were captured by the survey. In response to the survey question as to whether facilities adopted any or all of the *KY All Hazards LTC Planning and Resource Manual*, 70.0% (n=35) of respondents reported some degree of adoption. The survey question related to the percent of adoption of the manual found 24.0% had no adoption of the manual with 62.0% reported varying degrees of adoption.

---

**Table 5a : Best Practices Facility has in Place:**

---

|   | <u>N</u> | <u>%</u> |
|---|----------|----------|
| A comprehensive emergency preparedness plan                       | 46       | 92.0%    |
| An evacuation plan to an alternate care site                      | 37       | 74.0%    |
| A communication plan in place for disasters                       | 46       | 92.0%    |
| Transportation contracts in the event of an evacuation            | 28       | 56.0%    |
| A system to communicate with staff during an emergency            | 46       | 92.0%    |
| A central place to capture characteristics and needs of residents | 34       | 68.0%    |
| Emergency water supply for 2-3 days                               | 46       | 92.0%    |
| Emergency food supply for 2-3 days                                | 47       | 94.0%    |
| An on-site emergency generator                                    | 47       | 94.0%    |
| A generator that covers air conditioning                          | 28       | 56.0%    |
| A generator that covers heat                                      | 33       | 66.0%    |
| A generator that covers emergency lighting                        | 47       | 94.0%    |
| A generator that covers critical care of residents                | 42       | 84.0%    |
| Emergency generator fuel supply 2-3+ days                         | 31       | 62.0%    |
| Contract with emergency fuel vendor                               | 36       | 72.0%    |

Use of the CMS guidelines are represented in Table 5b below. Awareness of facility personnel contact, emergency manager contact and facility organization structure are high, from 84% -92%. In other words, facility organizational knowledge is high; however, the care of residents and safety of the building are substantially lower at 66% -



68%, respectively. This becomes especially problematic in a disaster or an emergency and identifies a significant gap in preparedness.

**Table 5b: LTC Adoption of CMS Recommended Guidelines**

|   | <u>N</u> | <u>%</u> |
|---|----------|----------|
| Facility Personnel                            | 46       | 92.0%    |
| Characteristics and Needs of Residents        | 34       | 68.0%    |
| Emergency Manager Contact Information         | 44       | 88.0%    |
| Facility Organization Chart                   | 42       | 84.0%    |
| Building Construction and Life Safety Systems | 33       | 66.0%    |

In addition, critical best practices for any organization’s emergency preparedness is the Hazard Vulnerability Analysis (HVA). The HVA assesses an organization, or in this case, nursing homes’ exposure to the most likely hazards so emergency plans can be developed based on the most significant risk both on scale of the risk and scope of the impact on the residents, staff and the building and critical systems. The HVA, however, is not a required element at the time of this study.

The *KY All Hazards LTC Planning and Resource Manual* includes seventeen types of hazards representing the most common hazards for Kentucky with planning templates for each hazard. A total of forty out of forty-seven respondents responded in the affirmative (85.1%, SD= 3.58) that they had completed an HVA. Survey respondents further identified a mean number of eleven hazards out of a possible seventeen hazards their facilities could have incorporated into their plans. The top three ranked templates were Resident

Elopement (97.1%), Tornado (97.1%) and Bomb Threat (91.3%). Two-thirds of responding facilities had identified thirteen different hazards to address in their plans. It is interesting that the preparedness for a bomb threat (91.3%) is greater than an extended power outage (84.1%). The power outage is an event that can occur during normal weather conditions or during a true disaster and provide a greater threat to facilities and resident safety. There may also be a factor that the LTC with natural gas-fired generators (18.0%) may not be impacted during an extended outage since they have a continuous source of back-up power.

---

**Table 5c. Disasters Addressed by the Facility Preparedness Plan**

---

|                                    | <u>N</u> | <u>%</u> |
|------------------------------------|----------|----------|
| Resident Elopement                 | 67       | 97.1%    |
| Tornado                            | 67       | 97.1%    |
| Bomb Threat                        | 63       | 91.3%    |
| Severe Thunder Storm               | 62       | 89.9%    |
| Earthquake                         | 59       | 85.5%    |
| Extended Power Outage              | 58       | 84.1%    |
| Water Shortage                     | 58       | 84.1%    |
| Winter Storms                      | 57       | 82.6%    |
| Hazardous Materials                | 53       | 76.8%    |
| Ice Storms                         | 52       | 75.4%    |
| Pandemic Influenza                 | 50       | 72.5%    |
| Extreme Temperatures               | 48       | 69.6%    |
| Flooding                           | 46       | 66.7%    |
| Hurricane                          | 16       | 23.2%    |
| Other Disease Outbreak (e.g. SARS) | 14       | 20.3%    |
| Sink Holes                         | 9        | 13.0%    |
| Wildfire                           | 9        | 13.0%    |

**Q6: Are LTC facilities discussing emergency preparedness planning and coordination with other community organizations?**

The survey asked respondents to select from a list of eighteen organizations/community partners with whom they had discussed emergency preparedness. This question addresses the active implementation of innovation as users have reached out to external sources, partnership activities and collaboration with others in their communities. The mean number of outside preparedness partners reported was 6.67 (SD=4.30), a relatively high number given the time and effort required to become part of a local, regional and/or state effort. The range of partners includes the following:

---

**Table 6: Discussed Emergency Preparedness with Community Partners**

---

|   | <u>N=</u> | <u>%</u> |
|---|-----------|----------|
| Fire Department   | 34        | 68.0%    |
| County Emergency Manager  | 34        | 68.0%    |
| Local Hospitals   | 29        | 58.0%    |
| Police  | 27        | 54.0%    |
| Local Health Department   | 25        | 50.0%    |
| Hospital Preparedness Program Regional Health Care<br>Coalition | 18        | 36.0%    |
| KY Emergency Preparedness for Aging & LTC Program               | 18        | 36.0%    |
| KY Emergency Management   | 16        | 32.0%    |
| KY Department for Public Health                                 | 14        | 28.0%    |
| County Emergency Operations Center                              | 14        | 28.0%    |
| Utility Company   | 14        | 28.0%    |
| KY LTC Ombudsman Program  | 12        | 24.0%    |
| Office of Inspector General                                     | 11        | 22.0%    |
| American Red Cross  | 11        | 22.0%    |
| State LTC Association   | 11        | 22.0%    |
| State Emergency Operations Center                               | 6         | 12.0%    |
| Hospice Organizations   | 6         | 12.0%    |
| National LTC Association  | 3         | 6.0%     |

Responses to this question reflect the preference to partner with local first responders and hospitals followed by regional partners and, lastly, state level responders.

**Q7: How prepared operationally are LTC facilities to manage an emergency or disaster?**

Operational preparedness addresses the infrastructure of the facility, basic operations to manage facility critical operations for resident care and, as the hurricanes have made apparent this fall, the ability to sustain the safety of the building, residents and staff. Continuity of Operations Planning (COOP) is another best practice from the CMS recommended guidelines. It covers the procedures necessary for LTC to operate in an emergency situation, whether they are sheltering in the facility, an alternate care site due to evacuation or are severely short-staffed due to pandemic outbreak. Elements of a COOP plan include staffing plans in an emergency, financial systems, IT and record-keeping, electronic health records, medications, sufficient supplies of food, water, medications, the delivery of needed services for residents onsite or off-site, power and shelter-in-place with enough supplies to be self-sufficient for a minimum of 2-3 days.

**Table 7: Facility Operations**

|  | <u>N</u> | <u>%</u> |
|--|----------|----------|
| <b>Back-up Generator Fuel Type*</b>                        |          |          |
| Diesel   | 28       | 56.0%    |
| Propane  | 7        | 14.0%    |
| Natural Gas  | 9        | 18.0%    |
| Other  | 3        | 6.0%     |
| <b>Current # Hours of Fuel in a Power Outage</b>           |          |          |
| 24 – 47*   | 4        | 8.0%     |
| 48-71  | 5        | 10.0%    |
| 72 - 96  | 12       | 24.0%    |
| 120 - 250  | 7        | 14.0%    |
| Unlimited  | 7        | 14.0%    |
| <b>Additional Fuel Contracts</b>                           |          |          |
| Have contract  | 36       | 72.0%    |
| Supplier outside of 50 miles                               | 6        | 12.0%    |
| <b>Days able to shelter-in-place during a power outage</b> |          |          |
| Two – Three*   | 23       | 46.0%    |
| Four – Six   | 5        | 10.0%    |
| Seven – Ten  | 14       | 28.0%    |
| More than Ten  | 4        | 8.0%     |
| <b>Functions Relying on Generator Power</b>                |          |          |
| Resident critical care functions (such as oxygen)*         | 42       | 84.0%    |
| Emergency lighting*  | 47       | 94.0%    |
| Heat   | 33       | 66.0%    |
| Laundry facilities   | 13       | 26.0%    |
| Air Conditioning   | 28       | 56.0%    |
| Refrigeration  | 38       | 76.0%    |
| Cooking Elements   | 28       | 56.0%    |
| Elevators  | 15       | 30.0%    |
| Monitoring/Security systems (e.g., WanderGuard®)           | 35       | 70.0%    |
| Other  | 3        | 6.0%     |
| <b>Continuity of Operations Plan (COOP)</b>                | 23       | 46.0%    |

The data followed by an asterisk reflect the compliance with regulatory standards. Yet, in an emergency, the lack of voluntary planning suggests heightened risk for KY should a

true no-notice disaster occur. The facility operational items listed are critical for sheltering-in-place particularly in a protracted catastrophic or near-catastrophic disaster situation such as a tornado or earthquake. Over 80% of respondent facilities exceeded the minimum number of days of back-up fuel and 54% can shelter in place during a power outage in excess of the 2-3 day minimum. Thirty-six percent (36%) indicated they could shelter-in-place for an extended period of time. The analysis of what facility functions are hooked up to the generator included heat and air conditioning. These functions have the biggest impact on maintaining resident quality of care and put residents at risk for dehydration and other life-threatening conditions. The hurricane Irma experience in Florida is a glaring example of the risks to life and litigation against a LTC facility caused by loss of heat and air conditioning. One LTC facility in western Kentucky had a similar experience in 2009 with the ice storm when no assistance was available from responders to provide assistance with a back-up generator and two residents died from the physical stress from loss of heat.

**Q8: How prepared are LTC facilities to manage a) an evacuation of residents from their facility in case of an emergency or disaster and b) to host evacuees from another institution/health care facility?**

The elements in preparedness for evacuation involve a number of steps in the development of an effective plan. The first step is to have policies and procedures in place for decision-making as to when to call for an evacuation compared to sheltering-in-place. Once resident life and safety are at risk or the infrastructure is damaged to the point that critical facility functions cannot be maintained, identification of who has authority to make the most difficult call any administrator can make takes place. Once that is decided, the next step is to call on the locations identified as alternate care sites, using established



Mutual Aid agreements and/or MOA/MOUs. As available beds are sought, the next step is to contact the county emergency manager and transportation providers under contract for evacuations. It is very helpful to have at least one transportation vendor located beyond fifty (50) miles in the event all transportation providers in the immediate vicinity are already committed to other facilities. Hurricane Katrina taught providers that the scale of the disaster may be so great, the availability of resources may require areas beyond the impact areas (Hyer, K., Polvika-West, L. & Brown, L. 2008).

An evacuation readiness index was developed to capture the facility readiness for evacuation. The following items were included in the index:

- Arrangements to evacuate to alternate care sites (ACS)
- Presence of Mutual Aid Agreements and/or MOA/MOUs
- Developed a previous connection with the County Emergency Manager about preparedness prior to a surge situation
- Presence of transportation agreements with providers during an evacuation
- Presence of a transportation agreement beyond 50 miles

A composite *evacuation readiness* index score was calculated by summing all identified indicators of evacuation (1=yes, 0=no) resulting in possible index scores ranging from 0-14. Actual scores ranged from 0 to 14 with the mean score of 6.6 and (SD=3.09) and 7.00 median score. T-tests were run against the independent variables and no significant differences were found. While no significant differences were found, one can observe the difference in scores between urban and rural respondents with the rural communities have fewer options for transportation and convenient transfer of residents to other LTC facilities and evacuation planning may be the difference between life and death.

Be that as it may, scores for all categories indicate the need for better planning, and additional training and exercises.

**Table 8: Comparison of Evacuation Readiness Index Scores by Selected Independent Variables**

|                              | <u>N</u> | <u>%</u> | <u>Mean</u> | <u>SD</u> | <u>t</u> | <u>df</u> | <u>p</u> |
|------------------------------|----------|----------|-------------|-----------|----------|-----------|----------|
| <b>Bed Size</b>              |          |          |             |           |          |           |          |
| Small-Medium                 | 31       | 62.0%    | 6.87        | 3.442     | .518     | 46        | .607     |
| Large                        | 18       | 36.0%    | 6.39        | 2.52      |          |           |          |
| <b>Ownership</b>             |          |          |             |           |          |           |          |
| For-profit                   | 31       | 62.0%    | 6.48        | 2.669     | -.510    | 47        | .612     |
| Non-profit/Governmental      | 19       | 38.0%    | 6.95        | 3.749     |          |           |          |
| <b>Region</b>                |          |          |             |           |          |           |          |
| East                         | 16       | 32.0%    | 6.63        | 2.335     | -.054    | 47        | .957     |
| West                         | 34       | 68.0%    | 6.68        | 3.426     |          |           |          |
| <b>Geography</b>             |          |          |             |           |          |           |          |
| Urban                        | 25       | 50.0%    | 6.08        | 2.999     | -1.336   | 47        | .188     |
| Rural                        | 25       | 50.0%    | 7.24        | 3.139     |          |           |          |
| <b>Job Title (Collapsed)</b> |          |          |             |           |          |           |          |
| Senior Management            | 27       | 54.0%    | 6.33        | 2.760     | -.790    | 47        | .433     |
| Other Management             | 22       | 44.0%    | 7.05        | 3.552     |          |           |          |

LTC may be called upon to receive evacuated residents from a damaged facility or a hospital in a major disaster in a so called “medical surge”. Plans that facilitate effective surge in the midst of an emergency is the presence of Mutual Aid agreements and MOA/MOUs, pre-arrangements related to reimbursement for services provided to evacuating residents at the receiving site and a process to identify available beds and report them to the sending facility. Over half of the facilities (54%, n=27) had a surge plan to

host evacuees from another healthcare facility, but only a few facilities had ever hosted evacuees from other LTC experiencing an emergency (12%, n=6) or had reimbursement plans in place if faced with a medical surge (16%, n=8). This is important because reimbursement to the receiving facility is based on the funding source of the bed in the sending facility. Therefore, if a private pay facility receives and cares for a Medicaid bed resident, the receiving site will only be reimbursed at the Medicaid rate. A similar situation exists between a Medicaid bed and a Medicare-paid bed with reimbursement higher for the Medicare bed resident.

**Q9: What experience do LTC facilities have with emergency preparedness training and drills/exercises?**

Over the years, Kentucky LTC have had access to a wide range of training from state emergency management, local emergency managers, HPP regional health care coalitions, the KY Emergency Preparedness for Aging & LTC Program, state LTC associations, national conferences and others. These same groups also sponsored local, regional and statewide emergency exercises testing communication planning, evacuation plans, surge plans among other types of exercises. These efforts by the sponsors and the LTC facilities that participated in them established networks of responders and LTC and preparedness partners leading to more effective skills and improved emergency plans. The following chart represents the sponsors of trainings and the same list for organizations sponsoring exercises. The mean number of trainings attended by respondents was 3.49 (SD=3.042) and the mean number of exercises in which they participated is 3.03 (SD=2.939).

**Table 9: LTC Experience with Training and Exercises**

| <b>Types of Sponsors</b>                          | <b># Trainings</b> |                 | <b># Exercises</b> |                 |
|---|--------------------|-----------------|--------------------|-----------------|
|   | Training Sponsors  |                 | Exercise Sponsors  |                 |
|   | <b><u>N</u></b>    | <b><u>%</u></b> | <b><u>N</u></b>    | <b><u>%</u></b> |
| Corporate Office                                  | 1                  | 2.7%            | 4                  | 10.8%           |
| County Emergency Management                       | 11                 | 29.7%           | 17                 | 45.9%           |
| County Emergency Operations Center                | 7                  | 18.9%           | 12                 | 32.4%           |
| Emergency Medical Services                        | 0                  | 0.0%            | 9                  | 24.3%           |
| Federal Emergency Management Agency (FEMA)        | 8                  | 21.6%           | 8                  | 21.6%           |
| Fire Department                                   | 7                  | 18.9%           | 1                  | 2.7%            |
| KY Emergency Management (KYEM)                    | 17                 | 45.9%           | 22                 | 54.5%           |
| KY Dept. for Homeland Security                    | 2                  | 5.4%            | 6                  | 16.2%           |
| KY Dept. for Public Health                        | 6                  | 16.2%           | 1                  | 2.7%            |
| KY Emergency Preparedness for Aging & LTC Program | 18                 | 48.6%           | 7                  | 18.9%           |
| Local Health Department                           | 8                  | 21.6%           | 3                  | 8.1%            |
| Police Department                                 | 4                  | 10.8%           | 6                  | 16.2%           |
| Red Cross   | 4                  | 10.8%           | 12                 | 32.4%           |
| HPP Regional Health Care Coalition                | 19                 | 51.4%           | 6                  | 16.2%           |
| State Emergency Operations Center                 | 5                  | 13.5%           | 13                 | 35.1%           |
| State LTC Association                             | 10                 | 27.0%           | 7                  | 18.9%           |
| Other   | 2                  | 5.4%            | 11                 | 29.7%           |

The analysis found that the training sponsors are not necessarily the sponsors of emergency exercises. There is a clear preference of training sponsors from the HPP regional health care coalitions (51.4%) followed by the KYEPA (48.6%) and KY Division of Emergency Management (45.9%). Responses to exercise opportunities were led by the KY Division of Emergency Management (54.5%), County Emergency Management (45.9%), KY Emergency Operations Center (35.1%), County Emergency Operations Centers (32.4%) and the Red Cross (32.4%). The results related to exercises are somewhat puzzling given the exposure to training that respondents received from HPP health care regional coalitions yet LTC has not participated much with regional exercises. It may suggest that the HPP regional health care coalition trainings LTC attended were KYEPA trainings facilitated as part of the HPP regional health care coalition meetings. In actuality, KYEPA provided the trainings and supported HPP regional health care coalition exercises. Perhaps HPP regional health care coalition exercises have not integrated LTC content sufficiently to warrant their time and effort. Anecdotal evidence suggests that HPP regional health care coalitions over-focus on hospital exercise requirements and do not fully support LTC participation.

**Q10: Are there any regional/geographic, facility size differences in regards to emergency preparedness plans? (i.e. elements of plan, specific potential emergencies and disasters addressed, awareness and utilization of recommended best practices and guidelines, engaging community organizations, facility operations, evacuations, and experiences with training, drills/exercises).**

T-tests were performed to explore whether there are significant differences between elements of emergency plans to the independent variables. Plan elements utilized in the analysis included a) three overarching operational elements of the plan found in the *KY*

*All Hazards LTC Planning and Resource Manual*, b) the number of HVA templates incorporated in their plans, c) the number of CMS recommended guidelines adopted, d) number of community preparedness partners, e) number of types of training attended by respondent, f) number of exercises and exercise sponsors, g) number of transportation contracts, h) number of evacuation sites, and i) the number of outside preparedness meetings attended in the past two years.

Significant differences were found between job titles categorized as senior management and “other” management and the number of HVA templates, number of community partners and number of exercise sponsors with “other” management scores higher than senior management respondents. A significant difference was found between the eastern and western regions on the number of CMS guideline categories. Differences in ownership type were significant for the number of meetings attended with non-profit/governmental strikingly greater than for-profit. Geographic differences between urban and rural locations were the most consistently significant for the number of CMS guidelines adopted, number of community partners, and the different numbers of exercise sponsors. Rural locations reported higher use of HVA templates, more partners, guidelines, and more exercise sponsors.

**Table 10: Mean Differences Across Emergency Plans**

|                                  | <u>Bed Size</u> |       |        | <u>Ownership</u> |            |        |    |       |
|----------------------------------|-----------------|-------|--------|------------------|------------|--------|----|-------|
|                                  | Small-Medium    | Large | t=     | For-Profit       | Non-Profit | t=     | df | p=    |
| # HVA Templates                  | 11.42           | 10.44 | 0.912  | 11.29            | 10.58      | 0.679  | 47 | 0.501 |
| # KY Manual Operating Sections   | 2.46            | 2.00  | 1.337  | 2.57             | 1.93       | -1.905 | 28 | 0.067 |
| Adopted # CMS Guidelines         | 4.45            | 3.88  | 1.921  | 4.17             | 4.33       | -1.083 | 34 | 0.286 |
| # Community Partners             | 6.52            | 7.00  | 0.346  | 5.93             | 7.88       | -1.216 | 34 | 0.232 |
| # Types Trainings                | 3.58            | 3.31  | 0.260  | 3.04             | 4.31       | -0.260 | 28 | 0.797 |
| # Exercises Attended             | 4.10            | 4.59  | -0.887 | 4.00             | 4.61       | -1.057 | 25 | 0.300 |
| # Exercise Sponsors              | 3.38            | 2.50  | 0.832  | 2.57             | 3.63       | -1.500 | 42 | 0.141 |
| # Transportation Contracts       | 2.16            | 2.33  | -0.333 | 1.83             | 2.77       | -0.541 | 44 | 0.591 |
| # Preparedness Meetings Attended | 11.77           | 15.47 | -0.901 | 11.52            | 16.77      | 2.009  | 34 | 0.052 |

**Table 10: Mean Differences Across Emergency Plans**

|                                  | <u>Region</u> |       |        | <u>Geography</u> |       |        |
|----------------------------------|---------------|-------|--------|------------------|-------|--------|
|                                  | East          | West  | t=     | Urban            | Rural | t=     |
| # HVA Templates                  | 11.38         | 10.86 | .478   | 10.16            | 11.88 | -1.735 |
| # KY Manual Operating Sections   | 2.29          | 2.35  | -186   | 2.06             | 2.58  | -1.675 |
| Adopted # CMS Guidelines         | 4.63          | 4.03  | 2.024  | 3.81             | 4.60  | -2.939 |
| # Community Partners             | 6.50          | 6.76  | -0.191 | 5.25             | 7.80  | -2.049 |
| # Types Trainings                | 3.87          | 3.23  | 0.622  | 2.18             | 4.60  | -2.601 |
| # Exercises Attended             | 4.25          | 4.23  | -1.038 | 3.96             | 4.50  | -1.038 |
| # Exercise Sponsors              | 2.50          | 3.35  | -0.848 | 1.94             | 4.05  | -2.308 |
| # Transportation Contracts       | 2.11          | 2.27  | -0.286 | 1.67             | 2.75  | -2.288 |
| # Preparedness Meetings Attended | 15.79         | 11.88 | 0.266  | 13.84            | 12.79 | 0.266  |



**Table 10: Mean Differences Across Emergency Plans**

|                                  | <u>Job Title</u> |            | t=     | df | p=    |
|----------------------------------|------------------|------------|--------|----|-------|
|                                  | Senior Mgt.      | Other Mgt. |        |    |       |
| # HVA Templates                  | 10.11            | 12.09      | -1.965 | 46 | 0.055 |
| # KY Manual Operating Sections   | 2.14             | 2.67       | -1.652 | 33 | 0.108 |
| Adopted # CMS Guidelines         | 4.32             | 4.19       | 0.444  | 43 | 0.659 |
| # Community Partners             | 5.58             | 8.15       | -2.038 | 41 | 0.048 |
| # Types Trainings                | 3.10             | 4.20       | -1.072 | 33 | 0.291 |
| # Exercises Attended             | 4.08             | 4.55       | -0.889 | 43 | 0.379 |
| # Exercise Sponsors              | 2.14             | 4.40       | -2.404 | 33 | 0.022 |
| # Transportation Contracts       | 1.82             | 2.71       | -1.82  | 28 | 0.079 |
| # Preparedness Meetings Attended | 13.23            | 13.44      | -0.052 | 35 | 0.959 |

**Q. 11: Are there any regional/geographic, facility size differences in regard to emergency preparedness plans in regards to a) Adoption and b) Implementation of the plan as defined by Rogers' Diffusion Innovation Theory?**

Adoption Scale

A composite *adoption index* scale was calculated by summing all identified indicators of compliance (1=yes, 0=no) resulting in possible index scores ranging from 0-15. Actual scores produced a mean score of 13.38 (SD=3.907), a fairly high score given that there were respondents with little adoption of compliance elements. The median score was 14.0 suggesting that half of responding organizations reported meeting adoption (compliance) requirements of preparedness. In this analysis, there were significant differences between east and western region mean scores. The difference in sample size could be a contributor as there are more early adopters in the east sample and that is where the initial adoption from LTC was the greatest.

**Table 11a: Adoption Scale:**  
Means Comparison between Adoption Scale and Independent Variables

|                              | <u>N</u> | <u>%</u> | <u>Mean</u> | <u>SD</u> | <u>t</u> | <u>df</u> | <u>p</u> |
|------------------------------|----------|----------|-------------|-----------|----------|-----------|----------|
| <b>Bed Size</b>              |          |          |             |           |          |           |          |
| Small-Medium                 | 31       | 63.3%    | 13.33       | 3.876     | -.245    | 46        | .807     |
| Large                        | 18       | 36.7%    | 13.61       | 4.132     |          |           |          |
| <b>Ownership</b>             |          |          |             |           |          |           |          |
| For-profit                   | 31       | 62.0%    | 13.81       | 3.978     | .986     | 47        | .329     |
| Non-profit/Governmental      | 19       | 38.0%    | 12.68       | 3.788     |          |           |          |
| <b>Region</b>                |          |          |             |           |          |           |          |
| East                         | 16       | 32.0%    | 14.94       | 2.909     | 1.992    | 47        | .052     |
| West                         | 34       | 68.0%    | 12.65       | 4.133     |          |           |          |
| <b>Geography</b>             |          |          |             |           |          |           |          |
| Urban                        | 25       | 50.0%    | 12.84       | 4.478     | -.977    | 47        | .333     |
| Rural                        | 25       | 50.0%    | 13.92       | 3.239     |          |           |          |
| <b>Job Title (Collapsed)</b> |          |          |             |           |          |           |          |
| Senior Management            | 27       | 55.1%    | 13.37       | 3.607     | -.034    | 46        | .973     |
| Other Management             | 22       | 44.9%    | 13.41       | 4.415     |          |           |          |

### *Implementation Index Scale*

Implementation in the Rogers' model occurs when the user, in this case a LTC facility, takes the innovation, emergency preparedness, and makes it their own by altering a model to fit the uses of the adopter. Implementation is a step beyond adoption whereby actual operationalization of the model is specific to the user, for instance taking voluntary measures beyond compliance. A composite *implementation index* scale was developed by incorporating actual elements that are named, identified and specific to steps towards preparedness. The implementation index incorporates the selection of steps based on the

CMS guidelines and best practices exclusive of those required (compliance) as well as critical elements based on best practices from the *KY All Hazards LTC Planning and Resource Manual*. The Implementation scale incorporates preparedness elements including:

- Facility awareness of the *KY All Hazards LTC Planning and Resource Manual* ,
- Percentage range of adoption of the *KY All Hazards LTC Planning and Resource Manual*,
- A Continuity of Operations Plan has been completed,
- At least one of three CMS recommended guidelines have been adopted,
- Facility can identify more than one transportation vendor contract,
- Facility has at least one memorandum of understanding or memorandum of agreement with another location for assistance during an emergency, primarily for receiving evacuees,
- The facility can name at least one community preparedness partner,
- The facility has trained staff certified in at least one level of the NIMS Incident Command System (ICS),
- At least one of three operating sections of the *KY All Hazards LTC Planning and Resource Manual* that have been adopted,
- Facility has completed its Hazard Vulnerability Analysis (HVA),
- Facility has adopted at least one of the emergency response templates for staff response during an emergency,
- The back-up generator is connected to building security in the event of a power failure,

- The back-up generator is connected to the elevators in the event of a power failure,
- The back-up generator is connected to kitchen appliances in the event of a power failure,
- The back-up generator is connected to the refrigeration units in the event of a power failure,
- The back-up generator is connected to the heating and air-conditioning equipment in the event of a power failure,
- Certified in NIMS Incident Command System,
- The back-up generator is connected to the laundry in the event of a power failure,
- The communication plan includes talking to resident families during an emergency,
- A facility representative has attended at least one outside preparedness planning meeting, such as the HPP regional health care coalition meetings during the past two years,
- The facility has made arrangements with at least two healthcare or non-healthcare related locations for sending evacuees,
- Facility has at least one transportation contract for evacuation purposes,
- And, at least one of the transportation vendors is beyond 50 miles,
- Facility participated in at least one outside emergency exercise or drill with a community partner,
- During the past five years, the number of exercises or drills the facility has participated in is at least one,
- The facility has a medical surge plan in-place.

A composite *implementation* score was calculated by summing all identified indicators of implementation (1=yes, 0=no) resulting in possible index scores ranging from 0-26. Actual scores ranged from 1 to 26 with the mean score of 19.06 (SD=5.505) and median score at 21.0 suggesting that half of responding organizations have implemented nearly all of preparedness best practices.

**Table 11b: Implementation Scale:**  
Means Comparison between Implementation Scale and Independent Variables

|                              | <u>N</u> | <u>%</u> | <u>Mean</u> | <u>SD=</u> | <u>t=</u> | <u>df</u> | <u>p=</u> |
|------------------------------|----------|----------|-------------|------------|-----------|-----------|-----------|
| <b>Bed Size</b>              |          |          |             |            |           |           |           |
| Small-Medium                 | 31       | 62.0%    | 18.19       | 5.02       | 1.219     | 46        | .229      |
| Large                        | 18       | 36.0%    | 16.33       | 5.38       |           |           |           |
| <b>Ownership</b>             |          |          |             |            |           |           |           |
| For-profit                   | 31       | 62.0%    | 17.00       | 5.17       | -0.769    | 47        | .446      |
| Non-profit/Governmental      | 19       | 38.0%    | 18.16       | 5.17       |           |           |           |
| <b>Region</b>                |          |          |             |            |           |           |           |
| East                         | 16       | 32.0%    | 19.13       | 3.54       | 1.614     | 47        | .113      |
| West                         | 34       | 68.0%    | 16.65       | 5.62       |           |           |           |
| <b>Geography</b>             |          |          |             |            |           |           |           |
| Urban                        | 25       | 50.0%    | 15.76       | 5.61       | -2.419    | 47        | .019      |
| Rural                        | 25       | 50.0%    | 19.12       | 4.10       |           |           |           |
| <b>Job Title (Collapsed)</b> |          |          |             |            |           |           |           |
| Senior Management            | 27       | 54.0%    | 17.22       | 4.83       | -0.275    | 46        | .785      |
| Other Management             | 22       | 44.0%    | 17.64       | 5.72       |           |           |           |

Scores on the implementation scale as viewed through the multi-variate analysis found degrees of voluntary preparedness from 60-74% implementation with the main differences found between the rural mean of 19.12, (SD=4.10) and the mean from urban facilities of

15.76, (SD=5.61). This indicates a difference between adoption (compliance) and voluntary implementation.

**Q. 12: What is the overall readiness of KY LTC for a no-notice emergency event?**

Readiness for a no-notice disaster would involve all of the best practices for LTC preparedness. The Adoption scale produced a mean score of 13.38 (SD=3.907) with a median score of 14.0 on a 1-15 scale. Actual scores for the Implementation scale ranged from 1 to 26 with the mean score of 19.06 (SD=5.505) and the median score at 21.0 suggesting that half of responding organizations have implemented nearly all of preparedness best practices, a score that was greater than expected. The implementation scores find that LTC that had attended training and voluntarily integrated best practices in their planning are not only prepared to put the CMS Final Rule for Emergency Preparedness in place. Overall readiness to respond to a no-notice emergency event, however, necessitates very strong evacuation planning. The mean score for the evacuation index was only 6.6 (SD=3.09) on 1 to 14 scale with a 7.00 median score with no significant differences on the multi-variate analysis. This finding suggests that plans may have integrated best practices but the greatest gap, i.e. evacuation planning, is the most critical in a no-notice situation. LTC require more training and exercising their evacuation plans to be reasonably prepared.

## CHAPTER IV

### DISCUSSION

A purposive sample of ninety-one long term care facilities in Kentucky out of 284 were invited to participate in a survey about their emergency preparedness planning as of July, 2014. Surveys from fifty (50) long term care facilities were received and analyzed. The research questions explored facility preparedness, professional affiliations, the number and scope of emergency preparedness and response partners, training received and the extent of comprehensive planning respondents had in place.

The importance of this study is significant as this research provides an historic perspective and baseline data for KY's LTC Emergency Preparedness initiatives from which to continue to research. It documents the importance of relationship building, personal contact and communication among all players in community resilience and contributes to the gap in studies on no-notice events. It provides a new application of the DOI theory to emergency preparedness and suggests the importance of change agents.

Overall, the results from this study suggest that the sample of LTC facilities that completed the survey are very prepared for emergencies arising from no-notice events. Specifically:

- The inroads made by the KYEPA and its partners are significant in raising the awareness of the best practices in the *KY All Hazards LTC Planning and Resource Manual*. Surprisingly, respondents did not become aware of the



- *KY All Hazards LTC Planning and Resource Manual* from peers (8%) rather from change agents. This is a departure from Rogers' definition of diffusion which views communication among peers as the most powerful means of spreading an innovation.
- Nearly all of the respondents reported that their facility had a comprehensive emergency preparedness plan, including required elements. Fewer respondents reported voluntary measures as part of their emergency preparedness plan.
- 70.0% of respondents reported some degree of engaging in adoption.
- Hazard Vulnerability Analyses were completed by 85% of facilities. They reported including an average of 11 out of 17 different listed hazards in their HVA.
- Active implementation of innovation is reflected by respondents' connections to external sources, partnership activities and collaboration with others in their communities. The mean number of outside preparedness partners reported was 6.67 is a relatively high number given the time and effort required to become part of a local, regional and/or state effort.
- Operational readiness was high as is the ability to shelter-in-place during a power outage of 2-10 days. There is a significant gap for respondent facilities in their Continuity of Operations Planning however placing them at risk in a catastrophic event and a pandemic situation.
- Scores for all categories on the evacuation index indicate the need for better planning, and additional training and exercises. There is also a gap in

preparedness to host evacuees from other facilities. Better planning is needed a surge of beds and reimbursement agreements if payment sources vary with concomitant reimbursement rates.

- Over the years, Kentucky LTC have had access to a wide range of training and emergency exercises. The analysis found that the training sponsors are not necessarily the sponsors of emergency exercises. Perhaps HPP regional health care coalition exercises have not integrated LTC content sufficiently to warrant their time and effort. Anecdotal evidence suggests that regional health care coalitions over-focus on hospital exercise requirements and do not fully support LTC participation.
- Geographic differences between urban and rural locations were the most consistently significant for the number of CMS guidelines adopted (rural), number of community partners (rural), and the different numbers of exercise sponsors (rural). Rural locations also reported higher use of HVA templates, more partners, use of guidelines, and more exercise sponsors but not to a significant degree.
- Differences between other manager and administrator scores for implementation may be a worthwhile focus in a follow-up study with a larger sample. The “work” of preparedness planning appears to be delegated to facility managers and other categories. Significant differences were found between job titles categorized as senior management and “other” management on the number of HVA templates, number of community partners and number of exercise sponsors with “other” management scores

higher than senior management respondents. In addition, other managers who attend training, participate in exercises and network with preparedness partners scored higher on implementation measures. These are the managers who provide operational leadership during an emergency. They report they have the responsibility yet not the power to make important decisions about preparedness planning priorities.

- There was relatively high adoption (compliance) with regulations in-place at the time of the survey followed by higher implementation scores than anticipated. Correlations of participation in training and exercises found adoption (compliance) is not correlated with training or exercises. However, implementation is greater as the number of trainings and exercises both increase.
- Rural LTC in the sample reported greater investment in comprehensive preparedness planning; on the other hand, the urban locations appear either late to the awareness of the need to prepare or expect the perceived plentitude of resources to be available when in need.
- Overall readiness in emergency preparedness implementation is high in this sample. Readiness to respond to a no-notice emergency event is high but the greatest gap is in evacuation planning, the most critical response challenge in a no-notice situation. LTC require more training for exercises of their evacuation plans to be reasonably prepared.

- Trainings offered by the KYEPA either free-standing or as part of events sponsored by the two state long term care associations are the preferred method of gaining new knowledge about preparedness.
- Survey data indicated the preference of LTC facilities to attend training that reflect their specific issues and concerns. The difference in participation rates between change agent offerings and more general HPP regional health care coalition training and exercises suggests the need to offer both types for preparedness implementation to continue longer term. These partnerships have proven to be a powerful dissemination approach which led to adoption and implementation. These partnerships should be continued.

### **Limitations of the Study**

This study is not without its limitations. The study used a purposive sampling approach to identify facilities with at least minimum exposure to emergency preparedness. Thus, sample selection was only able to target one-third of KY LTC facilities versus the entire population of facilities. The resulting final sample of fifty facilities limited the scope and level of the data analysis. Future studies should include all KY LTC in their adoption and implementation now that the CMS Final Rule has been enacted. Due to the concrete nature of emergency preparedness, a large number of activities were identified and measured, but no standardized measures were used. Finally, the study did not start out to explicitly test, apply, or operationalize Rogers theory of diffusion of innovation theory or its concepts. The relevance of Rogers' theory was only retrospectively applied in the

course of the data analysis and discussion of the results. Therefore, the findings related to adoption and implementation should be viewed in that context.

### **Practice Implications**

The findings of this study suggest that local, state and federal expectations of LTC facility preparedness and capacity to respond in no-notice emergencies are unrealistic. While LTC facilities prepare to become compliant with the scope of the CMS Final Rule, supporting agencies such as CMS, ASPR and FEMA as well as state departments for public health and emergency management do not consider the industry as part of critical infrastructure as they do hospitals. As such, they still look to LTC facilities to be self-sufficient. Self-sufficiency is less realistic than resilience. There will never be enough transportation assets to respond to a true community disaster. Everyone will be on their own until federal resources arrive, which usually would take 3-5 days. Therefore, the importance of resilience in the capacity to shelter-in-place for LTC facilities is the number one priority in terms of operational resources and staffing, communication resources and planning, and sufficient supplies of water, food, medications, and fuel for back-up generators. Emergency managers now talk about having on reserve a 7-10 day instead of the 3-day supply of critical resources as currently required by regulations. Storage of that amount of supplies is a challenge for many if not most facilities. However, good planning with vendors beyond the 50-mile range and relationships with county emergency managers may offset some of the risk of storing less than optimum supplies.

This is not to lessen the need for better evacuation planning or more frequent evacuation exercises for facilities. Since this is the biggest challenge, it deserves the most consistent practice through exercises. With staff turnover a challenge for all LTC facilities,

at least annual evacuation exercises should occur for all staff on all shifts. The CMS Final Rule and its emphasis on Memoranda of Understanding provides impetus for LTC facilities to establish as many agreements with potential receiving sites as feasible. In Kentucky, this would necessitate a statewide reach since there may not be sufficient beds to respond in a true disaster.

### **Future Research**

There continues to be a great need for more research on no-notice disaster events, especially outside of the research on hospital mass fatality response. Funds are scarce for researching emergency preparedness in non-hospital settings such as LTC facilities. What research is available is from study of anticipated events, such as hurricanes. Therefore, building on the current study, follow-up studies of emergency preparedness are warranted especially of no-notice emergency states, especially now with the advent of comprehensive new federal regulations.

The questions around diffusion suggest that further research on the role of change agents in the diffusion process may be worthwhile. The study highlights the significant impact of change agents on adoption and implementation with LTC as a target population. In view of the importance and scope of the new regulations, LTC needs as many trusted resources as possible that can use their language and assuage their concerns to meet the CMS timetable. Diffusion of Innovation is a very appropriate theory to utilize in adoption of new regulations regardless of the field. It can also be useful with groups or organizations serving vulnerable populations to prepare them for an emergency where there is a gap in regulation or no regulation, e.g. HUD-funded housing for older persons.

Federal efforts remain too militaristic in their language and approach. And, health care coalitions remain over-focused on hospitals needs without considering how to effectively engage LTC and keep them engaged. Continued research on these efforts is another worthwhile area for exploration as ASPR shifts their emphasis to self-sufficient coalitions. The greater questions revolve around the effectiveness and sufficiency of the CMS Final Rule regulations not only as written but in practice during disasters.

### **Conclusion**

Kentucky LTC facilities have identified a process of knowledge gathering and partnerships that contribute to enhanced emergency preparedness. It appears that the lower access to community resources has produced greater preparedness or resilience in no-notice emergency events. The facilities will require even more intense access to training and emergency exercises as they implement the CMS Final Rule regulations. If those resources become available, Kentucky long term care facilities are likely to utilize them and thus maintain the safety and quality of care of their residents under the most difficult of threats.

## REFERENCES

- Administration on Aging. (2016). A Profile of Older Americans: 2016.
- Administration on Aging. (2013). A Profile of Older Americans: 2013.
- Aldrich, N., Benson, W. (2008). Disaster preparedness and the chronic disease needs of vulnerable older adults. *Preventing Chronic Disease: Public Health Research, Practice, and Policy*, 5(1). Retrieved from [http://www.cdc.gov/pcd/issues/2008/jan/07\\_0135.htm](http://www.cdc.gov/pcd/issues/2008/jan/07_0135.htm).
- Baylor College of Medicine and the American Medical Association. (2008). *Recommendations for Best Practices in the Management of Elderly Disaster Victims*. Retrieved from <http://www.bcm.edu/pdf/bestpractices.pdf>.
- Berg, B. (2007). *Qualitative Research Methods for the Social Sciences*, 6<sup>th</sup> edition, Boston, MA: Allyn & Bacon.
- Bethel, J., Foreman, A., Burke, S. (2011) Disaster preparedness among medically vulnerable adult. *American Journal of Preventive Medicine*; 40(2), 139-143.
- Bloodworth, D.M., Kevorkian, C., Rumbaut, E, Chiou-Tan, F. (2007). Impairment and disability in the Astrodome after hurricane Katrina. *American Journal of Physical Medicine Rehabilitation*, 86(9), 770-775.
- Bolton, P., Zimmerman, C. (2007). Well-advanced notice: State agencies now using ATIS to communicate with the traveling public during disasters. *Roads & Bridges*, 45(2): 44-47. Retrieved from: <http://www.roadsbridges.com/rb>
- Brown, L., Hyer, K., Polivka-West, L. (2007). A comparative study of laws, rules, codes



and other influences on nursing homes' disaster preparedness in the gulf coast states. *Behavioral Science and the Law* 22, 655-675.

Brunkard, J., Namulanda, G., Ratard, R.(2008). Hurricane Katrina deaths, Louisiana, 2005. *Disaster Medicine and Public Health Preparedness*; DOI: 1097/DMP.0b013c31818aaf55.

Campbell, D, Stanley, J (1963). *Experimental and Quasi-Experimental Designs for Research*, Boston, MA: Houghton Mifflin.

Castro, C., Persson, D., Bergstrom, N., Cron, S. (2008). Surviving the storms: emergency preparedness in Texas nursing facilities and assisted living facilities. *Journal of Gerontological Nursing* 34(8), 9-16.

Centers for Medicare and Medicaid Services. (2009, 2016). *Nursing Home Data Compendium*, Washington, D.C. Retrieved from [https://www.cms.gov/CertificationandCompliance/Downloads/nursinghomedatacompendium\\_508.pdf](https://www.cms.gov/CertificationandCompliance/Downloads/nursinghomedatacompendium_508.pdf).

Centers for Medicare and Medicaid Services. (2006, 2013). *Emergency planning checklist recommended tool for effective health care facility planning*, Washington, D.C.

Chiu, YC, Zheng, H. (2007). Real-time mobilization decisions for multi-priority emergency response resources and evacuation groups: Model formulation and solution. *Transportation Research*, 43: 710-736.

Claver, M., Dobalian, A., Fickel, J., Ricci, K., Mallers, M. Comprehensive care for vulnerable elderly veterans during disasters. *Archives of Gerontology and Geriatrics*.56 (2013,) 205-213.

Cutter, S.L., Mitchell, J.T., Scott, M.S. (2000). Revealing the vulnerability of people and

- places: A case study of Georgetown County, South Carolina. *Annals of the Association of American Geographers*, 90(4), 713-717.
- Dearing, J., Beacom, A., Chamberlain, S., Meng, J., Berta, W., Keefe, J., Squires, J., Doupe, M., Taylor, D., Reid, R., Cook, H., Cummings, G., Baumbusch, J., Knopp-Sihota, J., Norton, P., Estabrooks, C. (2017). Pathways for best practice diffusion: the structure of informal relationships in Canada's long-term care sector. *Implementation Science*, 12, 1-13.
- Dearing, J. (2009). Applying diffusion of innovation theory to intervention development. *Research on Social Work Practice*, 19(5), 503-518.
- Dearing, J. (2004). Improving the state of health programming by using diffusion theory. *Journal of Health Communications*, 9, 21-36.
- Department of Health and Human Services, Office of Inspector General. (2006). *Nursing home emergency preparedness and response during disasters*. Washington, D.C.
- Department of Health and Human Services. Office of Inspector General. (2012). *Gaps continue to exist in nursing home emergency preparedness and response during disasters: 2007-2010*. Washington, D.C.
- Dobalian, A., Claver, M., Fickel, J. (2010). Hurricanes Katrina and Rita and the department of veterans affairs: A conceptual model for understanding the evacuation of nursing homes. *Gerontology*, 56, 581-588.
- Dosa, D., Hyer, K., Brown, L., Artenstein, A., Polvika-West, L., Mor, V. (2008). The controversy inherent in managing frail nursing home residents during complex hurricane emergencies. *Journal of Post-Acute and Long-Term Care Medicine*, 9(8), 599-604.

- Dosa, D., Grossman, N., Wetle, T., Mor, V. (2007). To evacuate or not evacuate: Lessons learned from Louisiana nursing home administrators following Hurricanes Katrina and Rita. *Journal of Post-Acute and Long Term Medicine*, 8(3), 142–149.
- Dosa, D., Hyer, K., Thomas, K., Swaminathan, S., Feng, Z., Brown, L., Mor, V. To Evacuate or Shelter in Place: Implications of Universal Hurricane Evacuation Policies on Nursing Home Residents. *Journal of the American Medical Directors Association*, 13(2), e1-190.e7.
- Eiring, H., Blake, S., Howard, D. (2012). Nursing homes preparedness plans and capabilities. *American Journal of Disaster Medicine*, 7(2), 127-135.
- Ferrence, R. (2001). Diffusion theory and drug use. *Addiction*, 96, 165-173.
- Fernandez, L., Byard, D., Chien-Chih Lin, Benson, S., Barbera, J. (2002). Frail elderly as disaster victims: Emergency management strategies. *Prehospital and Disaster Medicine*, 17(2), 67-74.
- Foxman, B., Camargo, C., Lilienfield, D., Liner, M. Mays, V., McKeown, R., Ness, R., Rothenberg, R. (2006). Looking back at hurricane katrina: Lessons for 2006 and beyond. *American College of Epidemiology Notes and Views*, 16(8), 652-653.
- Franklin, D, The FEMA phoenix, *Washington Monthly*, 2005. Retrieved from <http://www.washingtonmonthly.com/features/2005/0509.franklin.html>.
- Gavagan, T., Smart, K., palacio, H., Dyer, C., Greenberg, S., Sirbaugh, P., Fishkind, A., Hamilton, D., Shah, U., Masi, G., Ivey, R.T., Jones, J., Chiou-Tan, F. Bloodworth, D., Hyman, D., Whighan, C., Pavlik, V., Feigin, R., Mattox, K. (2006). Hurricane Katrina: Medical response at the Houston Astrodome/Reliant Center complex. *Southern Medical Journal*, 99(9), 933-939.

- Gayadeen, S., Phillips, S. (2014). The innovation of community policing and the COPS office: does diffusion of innovation hold in a manipulated environment? *International Journal of Police Science & Management*, 16(3), 228-242.
- General Accounting Office: *Emergency Preparedness: Opportunities Exist to Strengthen Interagency Assessments and Accountability for Closing Capability Gaps*. 2006. Retrieved from: <https://www.gao.gov/assets/670/667300.pdf>
- General Accounting Office: *Disaster Management: Improving the Nation's Response to Catastrophic Disasters*, 1993. Retrieved from <http://archive.gao.gov/t2pbat5/149631.pdf>.
- General Accounting Office: *Federal Emergency Management Agency, Factors for Future Success and Issues to Consider for Organizational Placement*, 2006. Retrieved from <http://www.gao.gov/new.items/d06746t.pdf>.
- General Accounting Office: Public Health and Hospital Emergency Preparedness Programs: Evolution of Performance Measurement Systems to Measure Progress, 2007. Retrieved from <http://www.gao.gov/new.items/d07485r.pdf>.
- General Accounting Office: The 9-11 Commission Report: Final Report of the National Commission on Terrorist Attacks Upon the United States, Official Government Edition, 2006. Retrieved from <http://www.gpoaccess.gov/911/index.html>.
- Gopalakrishnan, S., Wischnesnevsky, J., Damanpour, F. (2003). A multilevel analysis of factors influencing the adoption of internet banking. *IEEE Transactions of Engineering Management*, 50(4), 413-426.
- Haider, M., Kreps, G. (2004). Forty years of diffusion of innovations: Utility and Value in public health. *Journal of Health Communications*, 9, 3-11.

- Health Resources and Services Administration: Third Annual Report to the Secretary  
Department of Health and Human Services and to the Congress, Review and  
Recommendations: Interdisciplinary, Community-Based Linkages, Title VII, Part  
D Public Health Service Act., Retrieved from  
<http://bhpr.hrsa.gov/interdisciplinary/acicbl/reports/third/exec.htm>.
- Hick, J., Einav, S., Hanfling, D., Kisson, N., Dichter, J., Devereaux, A., and Christian,  
M. (2014) Surge capacity principles: Care of the critically ill and injured during  
pandemics and disasters: CHEST consensus statement. *CHEST*, 146 ( 4\_Suppl ):  
e1S - e16S.
- Hughes, J, Gerberding, J: Anthrax bioterrorism: lessons learned and future directions.  
*Emerging Infectious Diseases*, 8(10), 1013-1014.
- Hyer, K., Brown, L., Christensen, J., Thomas, K.: weathering the storm: challenges to  
nurses providing care to nursing home residents during hurricanes. *Applied Nursing  
Research*, 22, e9-e14.
- Hyer, K., Polvika-West, L., Brown, L. (2008). Nursing homes and assisted living  
facilities: Planning and decision making for sheltering in place or evacuation.  
*Generations*, Winter 2007-2008.
- Hyer, K., Polvika-West, L., Brown, L. (2008). Nursing homes and assisted living  
facilities: Planning and decision making for sheltering in place or evacuation.  
*Generations*, Winter 2007-2008.
- Hyer, K., Brown, L., Berman, A., Polvika-West, L. Establishing and refining hurricane  
response systems for long-term care facilities. *Health Affairs*. 25 (2006): w407-  
w411.

Hyman, D., Whighan, C., Pavlik, V., Feigin, R., Mattox, K. (2006).

Hurricane Katrina: Medical response at the Houston Astrodome/Reliant Center complex. *Southern Medical Journal*, 99(9):933-939.

Information Systems Innovation and Diffusion: Issues and Directions. (1998). Tor

Jermud Larsen, Eugene McGuire, (Ed.). Hershey PA: Idea Group Publishing.

Jernigan, D. B., Raghunathan, P. L., Bell, B. P., Brechner, R., Bresnitz, E. A., Butler, J.

C., Gerberding, J. L., the National Anthrax Epidemiologic Investigation Team.

(2002). Investigation of Bioterrorism-Related Anthrax, United States, 2001:

Epidemiologic Findings. *Emerging Infectious Diseases*, 8(10), 1019–1028.

doi:10.3201/eid0810.020353

Johnson, A., Howe, J., McBride, M., Palmisano, B., Perweiler, E., Roush, R., Sanders,

M., Sherman, A., Tumosa, N., Weiss, J. (2006). Bioterrorism and emergency

preparedness in aging (BTEPA): HRSA-funded GEC collaboration for curricula

and training. *Gerontology & Geriatrics Education*, 26(4), 63-86.

Katz, E., Levin, M., Hamilton, H. (1963). Traditions of research on the diffusion of

innovation. *American Sociological Review*, 28(2), 237-252.

Kentucky Cabinet for Health and Family Services, Office of Health Policy. 2013

*Kentucky Annual Long Term Care Services Report*. Retrieved from

<http://chfs.ky.gov/NR/rdonlyres/95CD55B9->

*AAAF-4018-B883-96A2AE7BE37D/0/2013LongTermCareServicesReport.pdf*

Kinnunen, J (1996). Gabriel Tarde as a founding father of innovation of diffusion

research. *Acta Sociologica*, 39, 431-442.

Laditka, S., Laditka, J., Xirasagar, S., Cornman, C., Davis, C., Richter, J. (2006). Protecting

nursing home residents during emergencies or disasters: An exploratory study from South Carolina. *Prehospital and Disaster Medicine*, 22(1), 42-48.

Levinson, D. *Nursing Home Emergency Preparedness and Response During Recent Hurricanes*. Department of Health and Human Services: Office of the Inspector General, 2006; Retrieved from <http://oig.hhs.gov/oei/reports/oei-06-06-00020.pdf>.

McGrath, C., Zell, D. (2001). The future of innovation diffusion research and its implications for management: A conversation with Everett Rogers. *Journal of Management Inquiry*, 10 (4), 386-391.

Mokdad, A., Mensah, G., Posner, S., Reed, E., Simoes, E.J., Engelgau, M.M., and the Chronic Diseases and Vulnerable Populations in Natural Disasters Working Group, (2005). When chronic conditions become acute: prevention and control of chronic diseases and adverse health outcomes during natural disasters. *Preventing Chronic Disease: Public Health Research, Practice, and Policy*, Retrieved from [http://www.cdc.gov/pcd/issues/2005/nov/05\\_0201.htm](http://www.cdc.gov/pcd/issues/2005/nov/05_0201.htm).

Murray, C. (2009). Diffusion of innovation theory: A bridge for the research-practice gap in counseling. *Journal of Counseling & Development*, 87, 108-116.

O'Brien, N. (2003). Emergency preparedness for older persons. *International Longevity Center Issue Brief*. Retrieved from <http://www.ilcusa.org/media/pdfs/epopib.pdf>.

Pandey, S., Yadama, G. (1992). Community development programs in Nepal: A test of diffusion of innovation theory. *Social Service Review*, 66(4), 582-597.

Pankratz, M., Hallfors, D., Cho, H. (2002). Measuring perceptions of innovation adoption: The diffusion of a federal drug prevention policy. *Health Education Research*, 17(3), 315-326.

- Peeters, J., JE de Veer, A., van der Hoek, L., Francke, A. (2012). Factors influencing the adoption of home telecare by elderly or chronically ill people: A national survey. *Journal of Clinical Nursing*, 21, 3183-3193.
- Pekovic, V., Seff, L., Rothman, M. (2008). Planning for and responding to the special needs of elders in natural disasters. *Generations*, Winter 2007-2008, 37-41.
- Ritzer, G. (2000). *Modern Sociological Theory*, 5<sup>th</sup> edition, Boston, MA: McGraw Hill.
- Rogers, E. (2003). *Diffusion of Innovations*, 5<sup>th</sup> edition, New York, NY: Free Press.
- Rubin, A, Babbie, E. (2001). *Research Methods for Social Work*, 4<sup>th</sup> edition, Belmont, CA: Wadsworth / Thompson Learning.
- Sreenonchai, S., Arunrat, N., Xu P., Yu X., (2017). Diffusion and adoption behavior of environmentally friendly innovation: Sharing from Chinese society. *International Journal of Behavioral Science*, 12(2), 90-109.
- Semenza, J., Rubin, C., Falter, K., Selanikio, J., Flanders, D., Howe, H., Wilhelm, J. (1996). Heat related deaths during the July 1995 heat wave in Chicago. *New England Journal of Medicine*, 335(2), 84-90.
- Silverman, M., & Weston, M (1995). Lessons learned from Hurricane Andrew: recommendations for care of the elderly in long term care facilities. *Southern Medical Journal*, 88(6),603-608.
- Third Annual Report to the Secretary Department of Health and Human Services and to the Congress, Review and Recommendations > Interdisciplinary, Community-Based Linkages, Title VII, Part D Public Health Service Act, [tp://bhpr.hrsa.gov/interdisciplinary/acicbl/reports/third/4.htm](http://bhpr.hrsa.gov/interdisciplinary/acicbl/reports/third/4.htm).



United States Geological Survey. (2011). Central & Eastern US Scenarios for 2011

National Level Exercise. Retrieved from

[https://earthquake.usgs.gov/scenarios/related/ceus\\_nle\\_2011.php](https://earthquake.usgs.gov/scenarios/related/ceus_nle_2011.php).

Waxman D., Chan E., Pillemer F., Smith T., Abir M., Nelson C. (2017). Assessing and improving hospital mass-casualty preparedness: a no-notice exercise. *Prehospital Disaster Medicine*, 32(6), 662-666.

Whitman, S., Good, G., Donoghue, E., Benbow, N., Shou, W., & Mou, S. (1997). Mortality in Chicago attributed to the July 1995 heat wave. *American Journal of Public Health*, 87(9), 1515-1518.

APPENDIX A  
SURVEY INSTRUMENT

## Kentucky Emergency Preparedness for Long Term Care

**Purpose:** The purpose of this survey is to understand the current status of Kentucky Long Term Care in emergency preparedness planning. This survey intends to assess current Kentucky Long Term Care readiness to respond to any and all emergencies.

**Directions:** We request that the person/s most knowledgeable about the facility emergency preparedness planning complete the survey to the best of your ability based on your facility's current emergency plan.

Facility Name: \_\_\_\_\_

County: \_\_\_\_\_

1. Current job title
    - Administrator
    - Assistant Administrator
    - Director of Nursing
    - Facilities Manager
    - Other (Please Specify):
- 

### EMERGENCY PREPAREDNESS PLAN

2. Does your facility have a comprehensive emergency preparedness plan?  
 Yes                       No                       Don't know
3. During the last two (2) years, have you made changes to your facility emergency preparedness plan?  
 Yes                       No                       Don't know
4. Has your facility completed a Hazard Vulnerability Analysis?  
 Yes                       No                       Don't know
5. Does your facility emergency preparedness plan address different types of disasters based on your Hazard Vulnerability Analysis? (check all that apply):
  - Bioterrorist Event (e.g. anthrax)
  - Bomb Threat
  - Earthquake
  - Extended Power Outage
  - Extreme Temperatures
  - Flooding
  - Hazardous Materials
  - Hurricane
  - Resident Elopement
  - Severe Thunder Storm
  - Sink Holes
  - Tornado
  - Water Shortage
  - Wildfire
  - Winter Storms
  - Other Disease Outbreak

(e.g. SARS) \_\_\_\_\_

- Facility Fire
- Pandemic Influenza

- Ice Storms
- Other (Please Specify):

\_\_\_\_\_

6. Are you aware of the UK/U of L *KY All Hazards LTC Planning and Resource Manual*?

- Yes
- No
- Don't know

→ If yes, from whom did you first hear about the manual? (Check all that apply)

- UK/UofL LTC Training
- State Long Term Care Association
- Regional Hospital Preparedness Coalition
- Local Health Department
- A peer in the field or facility (Please Specify their role: \_\_\_\_\_)
- Other (Please Specify): \_\_\_\_\_
- County Emergency Manager
- KY LTC Ombudsman Program
- KY Office of Inspector General
- KY Dept. for Public Health

7. Has your facility adopted any or all of the UK/UofL *KY All Hazards LTC Emergency Planning Manual*?

- Yes
- No
- Don't know

→ If yes, what percentage (%) of your facility emergency preparedness plan would you estimate has been adopted from the *KY All Hazards LTC Resource and Planning Manual*?

- 0%
- 1-20%
- 21-40%
- 41-60%
- 61-80%
- 81-100%

→ If yes, does your plan include any of the following? (Check all that apply)

- Emergency Response Disaster Templates /Job Tasks
- Employee Personal Readiness
- Facility Operations

8. Has your facility adopted the CMS recommended guidelines found in the *KY All Hazards LTC Resource and Planning Manual*, to include? (Check all that apply)

- Facility personnel names and contact information
- Characteristics and needs of residents, e.g., acuity

- Contact information of local and state emergency managers
- A facility organization chart
- Building construction and Life Safety systems information

9. Has your facility established an All Hazards Continuity of Operations Plan (COOP)?  
 Yes       No       Don't know

10. Has your facility been certified in any or all of the NIMS ICS modules? (Check all that apply)  
 ICS 100     ICS 200       ICS 700       ICS 800

**COMMUNICATION**

11. Have you discussed emergency preparedness planning and coordination with any of the following agencies/officials? (Check all that apply)

- |  |   |
|--|---|
| <input type="checkbox"/> County Emergency Management             | <input type="checkbox"/> Local Hospitals  |
| <input type="checkbox"/> KY Emergency Management                 | <input type="checkbox"/> State Professional or advocacy organization (e.g., state |
| <input type="checkbox"/> County Emergency Operations Center      | <input type="checkbox"/> National Professional or advocacy organization           |
| <input type="checkbox"/> KY Emergency Operations Center          | (e.g., American Health Care Association; Leading Age )                            |
| <input type="checkbox"/> Local Health Department                 | <input type="checkbox"/> UK/UofL Emergency Preparedness & Aging Program           |
| <input type="checkbox"/> KY Dept. for Public Health              | <input type="checkbox"/> Other Universities or Academic Medical Centers           |
| <input type="checkbox"/> Hospital Preparedness Program Coalition | <input type="checkbox"/> Red Cross  |
| <input type="checkbox"/> Local Energy Provider                   | <input type="checkbox"/> KY Office of Inspector General Surveyor                  |
| <input type="checkbox"/> Fire Department                         | <input type="checkbox"/> KY LTC Ombudsman Program                                 |
| <input type="checkbox"/> Police Department                       | <input type="checkbox"/> Don't know   |
| <input type="checkbox"/> Hospice Facilities                      | <input type="checkbox"/> Other (Please Specify):                                  |
| <input type="checkbox"/> None of the above                       | _____   |

During the last two (2) years, what is the approximate number of state, regional and/or local meetings attended by a representative of your facility per year, related to emergency preparedness planning? \_\_\_\_\_

12. Does your facility have a communication plan in place for emergencies?  
 Yes       No       Don't know

13. Do you discuss emergency preparedness plans with your residents' families?  
 Yes       No       Don't know

→ If yes, please share what types of communications, (e.g. initial admission, Family Nite, newsletters, etc.) \_\_\_\_\_  
\_\_\_\_\_

14. Do you discuss personal and family emergency preparedness planning with your staff?

Yes       No       Don't know

→ If yes, please share what types of communications, (e.g. new employee orientation, staff training, newsletters, etc.) \_\_\_\_\_  
\_\_\_\_\_

15. What is your primary mode of communication with your staff during an emergency?

Ham Radios       Land phone lines       Mobile phones  
 Satellite phones       Walkie-talkies       Smart Phone (e.g., Blackberry)  
 Other (Please Specify): \_\_\_\_\_  
\_\_\_\_\_

16. What is your primary mode of communication with outside authorities during a disaster?

Ham Radios       Land phone lines       Mobile phones  
 Satellite phones       Walkie-talkies       Smart Phone (e.g., Blackberry)  
 Other (Please Specify): \_\_\_\_\_  
\_\_\_\_\_

17. What is your primary mode of communication with residents' families during a disaster?

Ham Radios       Land phone lines       Mobile phones  
 Satellite phones       Walkie-talkies       Smart Phone (e.g., iPhone)  
 Other (Please Specify): \_\_\_\_\_  
\_\_\_\_\_

18. If your facility has had an evacuation in the last two (2) years, did you have any contact with your county Emergency Manager?

Yes       No       Don't know

19. If your facility has had an evacuation in the last 2 years, did you have any contact with the KY. Dept. for Public Health?

Yes       No       Don't know

## FACILITY OPERATIONS

20. Does your facility have an on-site emergency generator?

Yes       No       Don't know

→ If yes, what type of fuel does it require?

Diesel       Natural Gas       Propane       Other

---

→ Which of your facility's functions rely on generator power in the event of a power outage?

(Check all that apply)

|  |   |
|--|---|
| <input type="checkbox"/> Resident critical care functions (such as oxygen) | <input type="checkbox"/> Heat             |
| <input type="checkbox"/> Laundry facilities                                | <input type="checkbox"/> Air Conditioning |
| <input type="checkbox"/> Emergency lighting                                | <input type="checkbox"/> Refrigeration    |
| <input type="checkbox"/> Cooking Elements                                  | <input type="checkbox"/> Elevators        |
| <input type="checkbox"/> Monitoring/Security systems (e.g., WanderGuard®)  |   |
| <input type="checkbox"/> Other (Please Specify): _____                     |   |

→ How long (in hours) are you able to maintain power supply without receiving additional fuel from outside sources?

---

→ Do you have a contract to receive additional fuel for your generator during an emergency?

Yes       No       Don't know

→ If you have contracts to receive additional fuel, are any of the suppliers outside of a 50 mile radius?

Yes       No       Don't know

21. How many days is your facility able to shelter-in-place when there is a power outage?

One       Two – Three       Four – Six  
 Seven – Ten       More than Ten       Don't know

22. How many days supply of non-perishable food does your facility have stored in case of a power outage?

One       Two – Three       Four – Six  
 Seven – Ten       More than Ten       Don't know

23. How many days supply of emergency drinking water does your facility have if you lose water?

- One                       Two – Three                       Four – Six  
 Seven – Ten                       More than Ten                       Don't know

24. How is your emergency water supply maintained on site? (Check all that apply)

- Bottled water (individual size)                       Not stored on site  
 Bottled water (gallon/gallon+)                       Contract with vendor to provide water during an emergency  
 Chemically treated (e.g. bleach, First Water System)  
 Separate water tank, carbon filtered                       Separate water tank, non-carbon filtered  
 None of the above                       Other (Please Specify): \_\_\_\_\_  
 Don't know

25. Does your facility use electronic medical records?

- Yes                       No                       Still working on it

→ If yes, are you able to access your electronic medical records off site?

- Yes                       No                       Don't know                       Still working on it

## EVACUATION

26. Does your facility have a plan for resident evacuation to another healthcare facility?

- Yes                       No                       Don't know                       Within 50 miles                       Outside 50 miles

→ If there is another healthcare facility where your residents will be transferred in case of an evacuation, what type of facility is it? (Check all that apply)

- LTC (Sister Facility)                       Hospital  
 LTC (Non-Sister Facility)                       Independent Living Facility  
 Assisted Living Facility                       Hospice Facility  
 Other (Please Specify): \_\_\_\_\_

→ What type of agreements do you have in place with other healthcare facilities where your residents may be transferred in case of an evacuation? (Check all that apply)

- Contract                       Memorandum of Understanding                       Mutual Aid Agreement  
 None of the Above                       Don't Know                       Other (Please Specify): \_\_\_\_\_

→ Do you have reimbursement arrangements in place with these facilities for the hosting of your residents?

- Yes                       No                       Don't know



27. Do you have arrangements in place to transfer your residents to non-healthcare facilities in case of an evacuation?

- Yes                                       No                                       Don't know

→ If yes, what type of non-healthcare facilities do you have arrangements to transfer your residents to in case of an evacuation?

- Church                                       School  
 Community Recreation Center       Red Cross Shelter  
 Other (Please Specify): \_\_\_\_\_

28. Do you have contracts with transportation providers in the event of an evacuation?

- Yes                                       No                                       Don't know

→ If yes, what type(s) of providers? (Check all that apply)

- Ambulance Service                                       Non-Emergency Transport Vehicle  
 Bus Company – local schools                                       Wheelchair Accessible Vehicle  
 Bus Company – commercial                                       Other facility-owned vehicles  
 Churches                                       Community agencies  
 Vendors beyond 50 miles: \_\_\_\_\_  
 Other (Please Specify): \_\_\_\_\_

---

→ If yes, what are the names of the transportation providers with whom you have contracts?

---

---

---

**SURGE PLANNING**

29. Does your facility have a surge plan to host evacuees from another healthcare facility, such as LTC or a hospital?

- Yes                                       No                                       Don't know

30. Has your facility ever hosted evacuees from other LTC experiencing an emergency?

- Yes                                       No                                       Don't know

**EXPERIENCE WITH EMERGENCY PREPAREDNESS TRAINING AND DRILLS/EXERCISES**

31. In the past two (2) years, how many times has your facility participated in disaster drills/exercises (other than fire drills)?

- None     One     Two     Three     Four  
 More than four

→If yes, what agency/group managed the exercise? (Check all that apply)

- |   |   |
|---|---|
| <input type="checkbox"/> Federal Emergency Management Agency (FEMA)     | <input type="checkbox"/> State Emergency Operations Center  |
| <input type="checkbox"/> Kentucky Emergency Management Agency           | <input type="checkbox"/> County Emergency Operations Center |
| <input type="checkbox"/> County Emergency Management                    | <input type="checkbox"/> Fire Department                    |
| <input type="checkbox"/> UK/U of L LTC Training                         | <input type="checkbox"/> Police Department                  |
| <input type="checkbox"/> KY State LTC Association                       | <input type="checkbox"/> Corporate Office                   |
| <input type="checkbox"/> Regional Hospital Preparedness Coalition (HPP) | <input type="checkbox"/> Red Cross                          |
| <input type="checkbox"/> Local Health Department                        | <input type="checkbox"/> Other (Please Specify):            |
| <input type="checkbox"/> KY Dept. for Public Health                     |   |
- 

32. Have you personally participated in any disaster planning/emergency training other than at your facility?

- Yes     No     Don't know

→If yes, who provided the training? (Check all that apply)

- |   |   |
|---|---|
| <input type="checkbox"/> Federal Emergency Management Agency (FEMA) | <input type="checkbox"/> KY LTC state association           |
| <input type="checkbox"/> Kentucky Emergency Management Agency       | <input type="checkbox"/> County Emergency Operations Center |
| <input type="checkbox"/> County Emergency Management                | <input type="checkbox"/> Fire Department                    |
| <input type="checkbox"/> UK/U of L LTC Training                     | <input type="checkbox"/> Police Department                  |
| <input type="checkbox"/> Nursing Home Association                   | <input type="checkbox"/> Corporate Office                   |
| <input type="checkbox"/> Regional Hospital Preparedness Coalition   | <input type="checkbox"/> Red Cross                          |
| <input type="checkbox"/> Local Health Department                    | <input type="checkbox"/> KY Office of Inspector General     |
| <input type="checkbox"/> KY Dept. for Public Health                 |   |
| <input type="checkbox"/> Other (Please Specify):                    |   |
- 

33. List any additional training you or your facility would like to have available related to long term care emergency preparedness: \_\_\_\_\_

---

Please share any additional information you would like with the researchers to improve the Kentucky Emergency Preparedness for Aging and LTC Program?

---

*This survey was based on the work of David Hammond, P.hD, Hilary Eiring, Ph.D and Sarah Blake, Ph.D; Department of Health Policy & Management, Rollins School of Public Health, Emory University. We appreciate their generosity in allowing us the opportunity to adapt their material.*

## Appendix B

The views expressed in this dissertation are those of the author and do not reflect the official policy or position of the KY Department for Public Health, Preparedness Branch.

## CURRICULUM VITAE

Elizabeth M. Shiels, Ph.D, MSSW, LCSW  
University of Louisville  
Raymond A. Kent School of Social Work  
Louisville, KY 40292  
(502) 852-8003  
[betty.shiels@louisville.edu](mailto:betty.shiels@louisville.edu)

### EDUCATION

1965-1969 B.A. in Sociology, Trinity College, Washington, D.C.  
1991-1993 MSSW, PhD-C, University of Louisville, Louisville, KY  
2006-2018 Ph.D, University of Louisville, Louisville, KY

### POSITIONS AND EMPLOYMENT

2015-Present Director, CMS Region IV Quality Initiative (KY CHFS/OIG/CMS),  
University of Louisville, Kent School of Social Work  
2014-2017 Director, Kentucky Person-Centered Care Program (KY  
CHFS/OIG/CMS), University of Louisville, Kent School of Social  
Work  
2012-Present Director, Kentucky Emergency Preparedness for Aging & Long Term  
Care Program (KY CHFS/KDPH), University of Louisville, Kent  
School of Social Work  
2004-2012 Research Manager, Kentucky Emergency Preparedness for Aging & Long  
Term Care Program (KY CHFS/KDPH), University of Louisville,  
Kent School of Social Work  
2012-2015 Institutional Director, Ohio Valley Appalachian Region Geriatric  
Education Center, University of Louisville, Kent School of Social  
Work  
2004-2012 Research Manager, University of Louisville, Kent School of Social Work,  
1995-Present Licensed Clinical Social Worker, Private Practice

### PROFESSIONAL MEMBERSHIPS AND ACTIVITIES

1994-Present National Association of Social Workers  
2014-2017 Gerontological Association of America  
2006-2017 American Society on Aging

### ORAL PRESENTATIONS

1. Managing the Response to the Aging Population in an Emergency\*, Johnson, A.J., **Shiels, E.M.**, KY Governor's Emergency Management Conference,

2. Louisville, KY, June, 2010.
3. Are We ready? Special Issues for Older Adults before, during and after a Disaster\*, Johnson, A.J., **Shiels, E.M.**, Summer Series on Aging, Lexington, KY, June, 2010.
4. Challenging Mother Nature: Emergency Preparedness, Response and Recovery for Aging, KY Public Health Association Conference, Louisville, KY, March, 2011.
5. Emergency Preparedness for Vulnerable Populations Living in HUD-Funded Properties\*, **Shiels, E.M.**, Arnold, D., KY Multi-Family Housing Association Conference, Louisville, KY, May, 2012.
6. KY All Hazards Long Term Care Planning and Statewide Preparedness Collaborations\*, **Shiels, E.M.**, Veno, T.L., Ray, I.S., Veno, A., Leading Age Annual Conference, Denver, CO, October, 2012.
7. The Aging and Health Maintenance Populations in an Emergency\*, **Shiels, E.M.**, KY Inclusiveness Conference, Louisville, KY, April, 2013.
8. “Don’t Leave Me Behind!” Older Persons in the Community and Long Term Care\*, Johnson, A.J., **Shiels, E.M.**, KY Outreach and Information Network, Functional Needs Collaborative, Louisville, KY, September, 2012.
9. Long Term Care Surge Planning\*, **Shiels, E.M.**, Helm, B., Urlage, K., KY ESF-#8 Conference, Louisville, KY, March, 2014.
10. KCCRB Challenges with High Risk Frail Older Persons, **Shiels, E.M.**, KY Community Crisis Response Board Annual Training Conference, Frankfort, KY, May, 2016.
11. Person-Centered Care Training\*, **Shiels, E.M.**, McAllister, A., Office of Inspector General Conference, Frankfort, KY, December, 2016.
12. Building Community Resilience: Addressing Needs of Elderly and Disabled Populations Living in HUD-Funded Affordable Housing\*, **Shiels, E.M.**, Gillis, R.L., NACCHO Conference, Atlanta, GA, April, 2017.
13. CMS Final Rule for Emergency Preparedness and LTC\*, **Shiels, E.M.**, Leading Age KY Training, Louisville, KY, June, 2017.
14. Emergency Preparedness & Response Challenges for Older Persons, **Shiels, E.M.**, KY Housing Management Conference for Affordable Housing, Louisville, KY, April 26, 2018

## PUBLICATIONS

1. Cloud, R.N., Shiels, B., Kemp, D. (2003). Jefferson county public school evaluation report on a project shield alcohol and other drug intervention initiative at Breckinridge metropolitan high school for the school year ended June, 2003. Kent School of Social Work, University of Louisville.
2. Cloud, R.N., Kemp, D., Shiels, B. (2003) Jefferson county public school 2002 evaluation report on a project shield alcohol and other drug intervention initiatives at Breckinridge School. Kent School of Social Work, University of Louisville.

3. Bourassa, S.C., Barber, G., Hagan, A.S., Schneider, E., Shiels, E.M. (2003). Kentucky Housing corporation needs assessment: Phase II, a report to the Kentucky housing corporation. Urban Studies Institute, University of Louisville.
4. Barber, G., Stone, R., Shade, S.D., Shiels, B. (2002) Welfare reform: Impact of time limits on clients. Prepared for Cabinet for Families and Children, Commonwealth of Kentucky, Kent School of Social Work and Urban Studies Institute, University of Louisville.

### **Resources Developed**

- CMS Region IV Quality Improvement Initiative (cpgltc.org)
- Kentucky LTC Emergency Preparedness Manual
- Kentucky Long Term Care Medical Surge Receiving Plan
- Kentucky LTC Facilities Transportation Assessment Tool
- Kentucky Emergency Preparedness Manual for HUD-Funded Senior Housing
- Statewide Adoption and Diffusion of Person-Centered Care Practices in KY Certified Nursing Homes

### **PRESENTATIONS AT SCIENTIFIC MEETINGS**

1. Collaborative Disaster Planning by KY Hospitals, Long Term Care, Mental Health and First Responders\*, Johnson, A.J., Shiels, EM, American Society on Aging, San Francisco, CA, April, 2011.
2. Navigating the Maze of Guidelines and Requirements for Preparedness in Long-Term Care Settings\*, Shiels, EM, American Society on Aging Conference, San Diego, CA, March, 2014.
3. National Perspective: What are the Specific Needs and Challenges for Aging populations in Disaster Preparedness?\*, Shiels, EM, Citarella, B., Wood, A., National Institute of Medicine, Forum on Medical and Public Health Preparedness for Catastrophic Events, Washington, DC, February, 2015.
4. State and Local Perspective: Current Plans for Aging Populations and Opportunities for Improvement based on Challenges Identified?\*, Barbiere, M., Valentine, P., Shiels, EM, National Institute of Medicine, Forum on Medical and Public Health Preparedness for Catastrophic Events, Washington, DC, February, 2015.

### **OTHER PUBLICATIONS**

McBride M.R., Johnson, A.J., Shiels, E.M., Howe, JL, Tumosa, N., Metcalf, J.A., Roush, R.E., Weiss, J., et al. (2014). Outcomes of Academic-Based Geriatric Emergency Preparedness and Response (GEPR) Training for Medicine, Health,

and Behavioral Professions. In: Cefalu C. (eds) (pp. 163-189). Springer, New York, NY