

The Development Of An Education Plan to Maintain Staff Readiness In the Face Of Evacuation

In a Long-Term Care Setting

by

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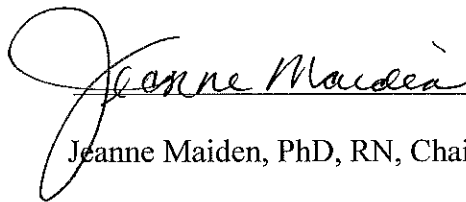
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“As we express our gratitude, we must never forget that the highest appreciation is not to utter words, but to live by them.”

-John F Kennedy (1917-1963)

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Abstract

Purpose: The primary aim of this paper is to provide long term care facilities effective teaching tools and methods to use with their initial and ongoing staff, to maintain staff readiness when faced with evacuation of their facility during a disaster. The secondary aim is to increase staff knowledge and comfort during and actual evacuation to maintain the safety and well being of their long term care residents.

Significance: Historically long term care facilities had not been as well prepared as acute care hospitals with disaster planning due to lack of funding, minimal regulatory requirements and community partnering. Despite this, they were faced with the same dilemmas as acute care hospitals with response and decision making during a disaster. Over time, and with more manmade and natural disasters, regulations were put in place for long term care facilities to develop and maintain emergency operations plans. These operation plans were required to include all potential events that may occur during a disaster; specifically how to manage an evacuation of a facility. It also included a required annual drill and a method to evaluate performance and address deficits. A survey of long-term facilities demonstrated that written plans were in place, but implementation of these plans, and performance evaluations of exercises were not being performed. This was partly due to the challenges of both the patient population in long-term care and the rapid turnover of staff to maintain readiness.

Design: This education plan was developed to include an initial orientation seminar for all newly hired staff. Annually a full-scale drill will be performed with a debrief, or evaluation of performance with deficits identified. Finally quarterly tabletop drill will be performed to address previously identified deficits, or newly identified areas of need. Teaching methods, such as simulation and the teach back method will be utilized to maximize learning.

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CHAPTER ONE

Introduction

In the aftermath of the terrorist attacks on September 11, 2001, it became clear the United States was unprepared for a disaster of that magnitude. The total cost of those attacks amounted to \$33-\$36 billion in lost earnings, property damage, clean up and restoration (Bram & Orr, 2002). It was not the economic effects, however, but the quickly identified threat to national security and vulnerability in preparedness that drove national action and change. In response to the disaster, the federal government created the Department of Homeland Security to prepare for and respond to domestic emergencies.

The weeks following the September 11 attacks saw other dangers in the form of several letters laced with weaponized anthrax and delivered to US cities and Congress members (Johnston, 2007). Heightened disaster planning focused specifically on continued terrorist attacks using weapons of mass destruction (Johnston, 2007). Weapons of mass destruction were defined as those “used to kill or bring significant harm to large numbers of people or and/or cause damage to manmade buildings” involving “the use of nuclear, biologic or chemical agents” (Brewer, 2001, p. 20).

The threat of anthrax focused more attention on health care for response and preparedness. As an initial step, acute care hospitals developed training programs and acquired communication devices, sophisticated security surveillance equipment, and personal protective equipment to enhance their disaster preparedness (Williams, 2006). By 2003 The Joint Commission (TJC), an accrediting agency for hospitals, had developed standards specifically addressing hospital preparedness for potential disasters caused by weapons of mass destruction. These standards included the development of an emergency management plan and testing

through simulated drills on radiologic and chemical events that required decontamination. The testing also covered potential biological threats requiring surveillance and isolation and mass casualty threats requiring surge capacity planning (TJC, 2007). Sudhan and Radonovich (2011) described *surge capacity* as “a health care system's ability to rapidly mobilize to meet an increased demand, to rapidly expand beyond normal services levels to meet the increased demand in the event of large-scale disasters or public health emergencies” (p. 76).

As health care organizations continued to prepare for national security threats, hurricanes Katrina and Rita hit the Gulf Coast in 2005. These hurricanes were by far the deadliest and costliest US disasters to date; approximately 1,800 people died, and hundreds more were left without homes, work, or social security. The total economic loss was estimated at \$150 billion (Burby, 2012). Recovery from these events was slow, laborious, and taxing on relief systems already in place.

These events changed how the US defined *disaster* and more importantly, demonstrated the country's preparedness for large-scale natural disasters. A natural disaster typically starts with a natural hazard. De Hoop and Ruben (2010) defined this trajectory thus:

...natural hazards may become natural disasters either because of action or because of lack of action by humankind. Natural hazards are physical events that happen due to (mostly unforeseen) acts of nature, such as drought, earthquake, flood or tsunami.

Natural disasters only happen when the natural hazard has serious negative consequences for people's livelihood. (Introduction, ¶1)

Natural disasters offer their own set of challenges. The challenges seen with Hurricanes Katrina and Rita included mass evacuation of health care facilities, fatality management, pet and family displacement, and victim relocation (Underwood, 2005).

After these hurricanes, the emphasis of disaster planning was on preparedness for and prevention of disaster due to domestic attack and natural disasters. Several gaps were identified after the hurricanes, many of which focused on managing the health and welfare of those most affected. Due to this, there was a renewed emphasis on strengthening health care organizations' preparedness and community partnerships in disaster planning (Hyer, Polivka-West, & Brown, 2007). Greater partnerships between acute care facilities and law enforcement and fire and local emergency medical services (EMS) helped to develop community relationships that increased communication, collaborative planning, gap identification, and security during a disaster (Grachek, 2006).

Significance of the Problem

Despite the progress made in the acute care hospital setting, the same could not be said for other health care organizations, particularly long-term care facilities. There were multiple reasons for this. TJC was leading the way with Emergency Management Standards that clearly defined expectations for health care organizations (2007), but because most long-term care facilities did not participate in the arduous TJC accreditation process, they did not stay abreast of the established standards or current trends (Hyer et al., 2007). Also, many states' Emergency Operations Centers (EOCs) did not recognize long-term care facilities as health care facilities, which meant they did not receive key state and federal services and funds to initiate improvements. It was also noted that community partnering typically did not include leadership from long-term care facilities in planning and collaboration (Hyer et al., 2006).

Long-term care facilities were first acknowledged as requiring evacuation in disasters during the 1994 Northridge, California earthquake. Donna Shalala, who was then Secretary of Health and Human Services, acknowledged the facilities' role and the need for them to have

expanded support and training services (Saliba, Buchanan, & Kington, 2004). In Florida, after Hurricane Andrew in 1992, the state created a blueprint for long-term care facilities because they were poorly trained and ill prepared for evacuation. Through the misfortune of those affected by Hurricanes Katrina and Rita, evacuation of all health care organizations in this country was closely scrutinized.

Flooding victims of Katrina and Rita were evacuated from a variety of health care settings in very large numbers. Due to limited alternative care sites, long term-care facilities became the venue of choice for evacuating patients requiring acute care (Castro, Persson, Bergstrom, & Cron, 2008). As a result, long-term care facilities both evacuated patients and received patients coming from acute care settings. Although they did well under the circumstances they had no benefit from federal funding for additional training and supplies. Despite their success, it was clear that a more organized plan would need to be put in place. Regulations would frame the plans to be made, but community collaboration, training, and equipment requirements would also need to be addressed before long-term care facilities could safely manage evacuation in the face of a disaster (Hyer et al., 2006).

Statement of the Problem

As of 2008, there were 16,800 long-term nursing facilities in the US and two million adults admitted to long-term care facilities annually (Saliba, 2008). One in two US women and one in three US men will spend some time in a long-term facility (Saliba, 2008) for short-term acute rehabilitation or long-term custodial care (Saliba, 2008). Despite these numbers, they had not been included or supported in disaster planning and emergency management (Gracek, 2007). Clearly, long-term care facilities were affected by the disaster. Of the 877 deaths from Hurricane

Katrina, 12% were those in nursing homes, 36% in their homes, 22% in hospitals, and the remainder in other locations (Clever, Dobalian, & Fickel, 2010).

As a result, long-term care facilities lacked the essential training, equipment, supplies, storage areas, personal protective equipment, administrative leadership, in-house facility support, incident command structures, communication devices, security support and, most importantly, the community and agency relationships to function effectively in a disaster (Hyer et al., 2007). Long-term care facilities were also faced with an extremely challenging patient population that displays both cognitive and physical impairments (Dosa, Hyer, Brown, Artenstein, Polivka-West, & Mor, 2008).

Staffing of long-term care facilities was further challenged with maintaining quality patient care while maximizing staffing (Williams, 2006). The 1987 passing of the Omnibus Budget Reconciliation Act (OBRA) defined the national requirements for long-term care facilities in the US, requiring that they provide adequate nursing staff to meet the physical, emotional, and psychosocial needs of their residents. It also required that a licensed nurse be available at all times and that eight hours a day, a registered nurse be in attendance to assess and oversee care. There was some flexibility in the remaining hours, which led many facilities to utilize Certified Nurse Assistants as their primary nursing staff. Staffing was defined and measured by hours per resident day (HPRD). At that time, OBRA required 1.78 to 3.70 HPRD for long-term care facilities, which individual states had the option of increasing (Bowblis, 2011).

Since that time the Center for Medicare and Medicaid (CMS) has increased their HPRD to 4.1; however, a survey of long-term care facilities by the California HealthCare Foundation found that 93% of nursing homes did not meet the CMS regulations. An obstacle previously

unreported was the average salary for a nursing assistant at \$10.35 per hour. Staff turnover rates were 49% in non-profit long-term care facilities and 70% in for-profit profit long-term care facilities. Inadequate staffing was the reason 2 of 3 nursing staff left long-term care employment, and 78% of long-term care facilities were found to be noncompliant with established regulations (Consumer affairs, 2010). This data supports the conclusion that long-term care facilities are in dire need of multiple resources to care for and plan for disaster preparedness.

In the years following Katrina, government disaster planners recommended that long-term care facilities be required to develop and maintain written emergency operations plans to address all potential emergencies and disasters. By 2008 these became federal regulations holding long-term care facilities to many of the same standards in place for acute care hospitals (Code of Federal Regulations, 2008). These written plans included the components of evacuation: physically moving patients from a damaged area to a secure area, safely transporting patients to another facility, and converting useable space for immediate care of emergency admissions (Code of Federal Regulations, 2008). As a result, long-term care facilities created written plans and developed some community partnering to fill gaps in knowledge, planning, response, and recovery from a disaster (Blanchard & Dosa, 2009).

The challenge for these facilities is to maintain a state of readiness in the face of disaster with their present resources. Rapid staff turnover and fragile patient population remains huge barriers (Hyer et al., 2006).

Purpose of this Paper

The purpose of this paper is to develop an educational plan that will address the challenges of the long-term care environment and maintain staff readiness when faced with evacuation.

CHAPTER TWO

Literature Review

A literature search was performed utilizing CINAHL, ProQuest, PubMed, and Social Science Full Text databases. The keywords used were *disaster planning, long-term care facilities, evacuation, nursing homes, firestorm 2007 San Diego County, simulation with disaster, simulation in education, Sister Callista Roy, Roy adaptation model, California department of health long-term care facility regulations, the Code of Federal Regulations, and The Joint Commission Emergency Management standards*. The search yielded 48 articles related to this topic; of these, approximately 12-18 were noteworthy. The most pertinent will be included in this review of literature.

Disaster Regulations

In 2008, the California Department of Health and the Code of Federal Regulations outlined requirements that addressed disaster planning in long-term care facilities (California Code of Regulations, 2008; Code of Federal Regulations, 2008), titled “Essential Plan Elements For External Disaster Plans in California Long-Term Care Facilities” (California Code of Regulations, 2008). Facilities were required to create a plan to address all potential disasters and emergencies, collaborate with local emergency planning officials, review the plan periodically, and practice the plan (California Code of Regulations, 2008). They were also required to be able to “stand alone” for 72 hours, meaning that utilities, equipment, and supplies must exist to maintain plant operations and meet residents’ needs for that period of time.

The regulations also addressed recalling of staff and guidelines on moving patients from damaged areas within the facility, planning for incoming admissions, and relocating and transporting patients when needed. Additional elements included addressing effective and

redundant communication methods, efficiently mobilizing and transferring health records, developing a plan to meet the psychosocial needs of the patients and finally, and developing a communication plan to notify family of an evacuation (California Code of Regulations, 2008, California Code of Regulations, Title 22). Federal law also required that all Medicare and Medicaid-certified facilities have written plans and procedures to address all potential emergencies and provide training to employees in emergency procedures (Levinson, 2006).

TJC also wrote standards for long-term facility emergency management that were similar in nature to the California code of regulations. However, as most long-term care facilities do not seek accreditation from The Joint Commission, they are not necessarily required to meet those standards (Gracek, 2006). The only advantage of following TJC's requirements would be that the sites would have had thorough plans in place long before the 2008 federal regulations were put in place.

Many tools have been created to assist long-term care facilities with planning. In 2009 the San Diego County Emergency Medical Services, in conjunction with the Health and Human Services Agency, developed and disseminated the Skilled Nursing Facility Desktop Disaster Reference to outline key response processes in the long-term care setting (San Diego County).

Evacuating Facilities

Castro et al. (2008) studied the responses of long-term care facilities that either evacuated or took in evacuees in the Houston, Texas area following Hurricane Rita. The setting included 13 counties in Texas that were affected by Rita and Katrina. A questionnaire was sent to 520 licensed long-term care facilities with a 42% response rate. Survey questions addressed time of evacuation, transportation issues, community agency support and financial impact, and untoward outcomes including death and inadequacy of medicine, equipment, and supplies.

Findings indicated a lack of sufficient resources or support to respond to the disaster. Nearly all of the responding facilities reported having a disaster plan but only 54% found it helpful; 64% reported revising their disaster plans after Hurricane Katrina. Only 27% reported having a good working relationship with community agencies, and 68% reported the desire to strengthen their community relationships. Nearly 6% of facilities that needed to evacuate residents reported deaths due to the hurricane. Of note, only 19% reported contacting either a physician or medical director prior to evacuating residents (Castro et al., 2008).

Based on these findings, recommendations were made to provide long-term care facilities with disaster plans that specifically addressed the challenges of evacuation. These recommendations centered on transportation arrangements, communications with receiving facilities, adequate equipment and supplies en route, and facilities' integration into a community disaster plan (Castro et al., 2008).

Hyer et al. (2006) reported the efforts by the State of Florida to develop a hurricane summit after the 2005 hurricanes hit the Gulf Coast to improve outcomes for those living in long-term care facilities. The convening panel included 100 participants from five states (Alabama, Florida, Louisiana, Mississippi, and Texas) that were directly affected by Hurricanes Katrina and Rita and representatives from the Federal Emergency Management Agency (FEMA) and the Department of Defense. The panel's initial findings were that the elderly were most affected by the devastation of Hurricane Katrina; while only 15% of the area's population was over the age of 60, 74% of deaths associated from Katrina were in this age group (Hyer et al., 2006).

The summit panel also noted that long-term care facilities did not have the same infrastructure support as other health care settings. During the 2004 Florida hurricane season,

long-term care facilities were given the same priority to regain electrical and water services as those of day spas (Hyer et al., 2006). State agencies openly admitted that they did not regard long-term care facilities as essential or as primary care facilities. Long-term care facilities were often faced with making decisions regarding when to evacuate; absent outside agency guidance or coordination, they were often left to make this determination without clear-cut guidelines regarding destination or transportation options. Based on these identified issues, five recommendations were formulated to assist long-term care facilities: coordinate emergency backup utility support, develop decision-making criteria when faced with potential disaster, create a resident tracking method, utilize effective communication devices, and refine disaster guides (Hyer et al., 2006).

Saliba et al. (2004) studied long-term care facilities affected by the Northridge, California earthquake in 1994. The 6.7-magnitude quake left 57 dead, 900 people needing evacuation from damaged hospitals, and 9,000 others seeking emergency medical care (Saliba et al., 2004). Five months later, researchers surveyed 144 nursing facilities in the Los Angeles area, both damaged and undamaged by the quake, about their experiences. One hundred and thirteen facilities responded (78% response rate), representing 11,365 patients. The sample also included interviews of three social workers that were involved with discharge planning during the evacuations and three social workers that were not. Sixty-four percent reported a loss in at least 1 vital service, 87% implemented disaster plans but 65% of those found their plans to be inadequate, 74% reported that there was no agency coordinating evacuation or patient transportation, and nearly all facilities reported that lack of staffing and minimal or no medical support severely affected their operational efforts to manage the disaster. Saliba et al. (2004) concluded that long-term care facilities were severely underutilized and under supported during a

large-scale disaster, and they recommended that future community plans include long-term care facilities to provide a viable option as alternative care sites.

Vulnerable Populations

Roughly half of nursing home patients have dementia and 42% of assisted living patients have mild to moderate cognitive impairment. The elderly/cognitively impaired typically suffer from issues of mobility, toileting, dietary needs, and have limited to no self-care abilities (Reed, 2006). Reed's study (2006) points out the need to provide practice guidelines for volunteers and lay people to better care for this frail population, which requires unique, specialized care during a disaster. Representatives from the Alzheimer's Association, the American Association of Homes for the Aging, the American Health Care Association, the American Health Quality Association, the American Medical Directors Association, the National Association of Directors of Nursing Administration, and the National Center for Assisted Living came together to create practice guidelines to care for those with cognitive impairment (Reed, 2006).

Reed (2006) also cited a planning guide to use by unlicensed staff who may be caring for this population. The guide focused on consistent care and the reduction of environmental change. When changes to the environment occur, it can increase behaviors that are otherwise well controlled in the long term care setting (Reed, 2006). Based on this, evacuation must be as efficient and streamlined as possible, to minimize disruption and contribute to the well being of the elderly and cognitively impaired residents.

James, Lach, and Langan (2005) analyzed an increase in ventricular arrhythmias among older patients living in New York City in the months following the September 11 terrorist attacks and determined that older adults were at greater risk during and after a disaster than their younger counterparts. The Centers for Disease Control (CDC) also reported that following

Hurricane Charley in 2004, one-third of community residents with an older individual in the home reported problems with medical conditions getting routine care (CDC, 2005). Older adults also have physiological changes due to aging that may predispose them to stronger effects from any biologic, radiologic, and chemical agent exposure (James et al., 2005). Furthermore, older adults tend to have co-morbidities that may alter or disguise the effects of an exposure to a biologic agent more so than a younger adult or child (James et al., 2005).

Long-Term Care Facility Staff Disparities and High Staff Turnover Rates

Kovan and Fugate-Whitlock (2010) noted that middle-aged women make up the vast majority of staff in long-term care facilities. These women are among the least-paid and are disproportionately members of minority groups. Leadership and administration roles, however, were male-dominated. They also identified a high level of single parents working at long-term care facilities, but did not include childcare provisions in their Emergency Operations Plans. As prior literature supports, inadequate staffing is rampant in nursing homes, with 93% of nursing homes not meeting the 4.1 nursing hours per resident per day. Staffing was the most frequently cited reason for staff leaving nursing home employment (Consumer Affairs, 2010).

Gaps in Preparedness for Nursing Homes

In August 2006, the Department of Health and Human Services, under the Office of Inspector General Daniel Levinson, published a report entitled, “Nursing Home Emergency Preparedness and Response During Recent Hurricanes.” The objectives of the report were to determine nursing home deficiencies, examine experiences, and review emergency plans. Data were collected from 20 nursing homes in the states impacted by Hurricane Katrina. The findings revealed that 94% of nursing homes met federal standards for emergency plans and 80% for sufficient emergency training. All 20 nursing homes experienced problems executing emergency

plans and negative health impacts to their residents during evacuation. Additionally, emergency plans were not always complete, nor did they address all the factors required to successfully evacuate residents, further indicating a lack of collaboration between state and local entities and nursing homes (Levinson, 2006). The two strong recommendations made based on this study were that CMS strengthen federal certification standards for nursing home emergency plans by requiring specific elements to address evacuation and resident welfare, and that CMS encourage communication and collaboration between state and local emergency entities and nursing homes (Levinson, 2006).

In April 2012 Levinson wrote a follow-up report entitled, “Gaps Continue to Exist in Nursing Home Emergency Preparedness and Response During Disasters.” In this study 24 nursing homes impacted by floods, hurricanes, and wildfires from 2007-2010 were studied. Unfortunately, little to no progress had been made in improving emergency plan execution since the 2006 report. The nursing homes’ emergency plans lacked relevant information and contained only 50% of the CMS checklist requirements. Levinson also identified the challenges nursing homes continue to face with transportation during evacuation, lack of collaboration with local emergency management, and residents who develop health problems (2012). Recommendations from this study included revising federal regulations that include specific requirements for plans and training as well as the use of specific checklist templates (Levinson, 2012).

Economic Effects of Disaster

Despite enormous costs that are involved when a disaster hits, governments and businesses continue to remain somewhat unprepared. This is due, in part, to the fact that adequate preparation requires huge investments for small-chance events (Beerens, Helsloot,

Jongejan, & Vrijling, 2011). Of the four tenets of emergency management, far more emphasis is still placed on response and recovery than on preparation and mitigation.

In their article, “How Prepared is Prepared Enough?” Beerens et al. (2011) present a cost-benefit analysis model for disaster preparedness. The results did reflect overall financial savings when the emphasis was placed upon prevention and mitigation but listed many variables, one of which was the cooperation between all emergency response stakeholders and how working more efficiently increases capacity (Beerens et al., 2011). Other researchers also noted the present division of priorities regarding disaster management (de Hoop & Ruben, 2010). They used the terms *ex-ante* (“before the event”) and *ex-post* (“after the event”) to describe disaster efforts, noting that much emphasis was placed on the ex-post period in a reactive manner while very little emphasis was put on the ex-ante measures. The researchers compared costs of ex-ante measures and ex-post measures for a simulated earthquake and results did reflect a decreased financial loss for those who participated in ex-ante measures than for those who used ex-post measures only. External aid would directly affect the results of this study, however, and may continue to slow efforts fully engage in ex-ante measures in disaster planning (deHoop & Ruben, 2010).

Method to Properly Educate

Simulation is a method of teaching that replicates the environment in which learning is to take place (Berndt, 2010). Simulation provides a safe environment for learning, enhances skill and knowledge acquisition and critical thinking, and increases competency levels. Variables can be manipulated to provide individualized challenges in a safe setting (Berndt, 2010). Simulation has been successfully used since the 1950s in nursing education (Catanzaro & Morrison, 2010). According to the Institute of Medicine (2000), simulation was identified as a training and

feedback method in which learners could practice tasks and procedures in a realistic, lifelike environment. Realistic simulations could be used to establish performance standards and expectations for patient safety (IOM, 2000). Simulation exercises can also be used in health care for team training, emphasizing communication, decision-making, and increasing situational awareness to enhance patient safety (Catanzano & Morrison, 2010).

Artenstein et al. (2008) recognized a lack of disaster and bioterrorism preparedness for internal medicine residents and developed a curriculum that included four didactic sessions and a four-hour seminar at a high-fidelity simulation (SIM) lab. The SIM lab featured manikins resembling true patients that presented with signs and symptoms consistent with a biologic exposure. The study compared 30 residents who took the program at the SIM lab and 30 who did not to discover whether the SIM lab enhanced learning. Results reflected a greater knowledge base and sense of subjective preparedness in the residents who participated in the SIM lab than in those who did not participate. Interestingly, this gain in knowledge base was not evident a year later, which indicated the simulation exercise needed reinforcement at regular intervals (Artenstein et al., 2008).

McLaren Regional Medical Center in Flint, Michigan, conducted live simulation scenarios when conducting annual disaster drills (Kallas, 2007). Participants performed their annual drills with no notification or advance warning to staff or leadership at their facility (Kallas, 2007). Leadership was given a disaster scenario involving a nearby airplane crash with 50 victims seeking care at their facility. High school students were used as mock patients and arrived *en masse*. The mock disaster played out and tested response, and after the event a thorough debrief took place to identify gaps and create action plans to better prepare for a true event. Issues identified were patient identifiers, tagging of blood work and lab results, and

placement of minor injury patients. As a result, McLaren trained their case managers to work as triage, work with incoming families, or float to where needed during a disaster (Kallas, 2007).

They plan to perform a follow-up drill to test their improvements.

Breslin, McGowan, Pecheux, and Sudol (2007) identified a very effective type of simulation known as *gaming*, which utilizes interactive computer games to execute and assess the effectiveness of strategies when responding to a disaster. A particular game known as HotZone™ allows participants to make crucial decisions and see the effects of those decisions, thereby gaining practical experience. The advantages of gaming simulation are that it is logistically simpler, less expensive, less labor intensive, and equally beneficial when compared to human or mechanical simulation (Breslin et al., 2007).

Mechanical simulations can cost \$5,000-\$25,000 just for the purchase of manikins, not to mention the costs involved with the follow-up training and equipment maintenance that accompany such a program (www.laerdal.com). Human simulation requires either volunteers or paid participants who are trained to reenact scenarios. Additional costs can vary, but the exercise itself requires staff participation, which leads to higher labor costs. In comparison, the cost of simulation gaming can range from virtually nothing to \$5,000 for sophisticated programs. While it does require software support that may initially lead to higher costs (Faria, 2005), gaming is more flexible; by manipulating variables, scenarios can be changed, team members added, and actions performed by students will demonstrate results.

Results demonstrated computer games were an extension of simulation and provided the best factors of human or mechanical simulation while providing an interactive, graphics-based user interface (Breslin et al., 2007). These games featured a multiplayer component that incorporates communication and cooperation to allow for accurate reproduction of team settings.

Game scoring was a natural motivator and a fun way to improve performance and build upon recreational experiences of participants (Breslin et al, 2007).

Summary

The literature has shown consistent struggles long-term care facilities face regarding disaster response and the need to evacuate. Initially, long-term care facilities were not seen as significant when disasters hit, despite having played a role in disasters such as the California earthquake of 1994 and Gulf states' hurricane planning of 1992. It was not until Hurricane Katrina occurred, however, that disaster planners analyzed the direct involvement of long-term care in disaster management.

Initially, mandates were given to develop written plans and implement measures that would address long term care residents' needs in the event of disaster. These operational plans were written, but often not well shared with staff. Long-term care facilities are also further challenged with a vulnerable population to manage and an unstable staff with high turnover and low staffing ratios, which creates additional barriers for successful disaster planning and evacuation preparedness. Recent literature by the Inspector General (2012) demonstrates continued gaps in emergency planning and successful evacuation planning for long-term care facilities.

The literature has also supported utilizing methods of learning that replicate real-life scenarios to develop skills to prepare for certain life scenarios. Simulation has been found to assist in translating learned skills into practice. The challenge remains to create a learning model that will enhance staff readiness and incorporate the recognition of the elderly as a vulnerable population requiring special attention when faced with a sudden large-scale evacuation and relocation. Despite their deficits and enormous challenges, long-term care facilities have

contributed positively to disaster outcomes, and it is imperative that they be equipped with disaster preparedness skills to safely evacuate their residents when necessary.

CHAPTER THREE

Methods

Conceptual Framework

Sister Callista Roy's Adaptation model provides the theoretical framework for this study. The model addresses the challenges that accompany evacuation of a vulnerable population from a health care facility in the face of disaster. Roy's model enables the nurse to integrate the physiologic, self-concept, role function, and interdependence components and promote adaptation to internal and external environmental stimuli (University of Philippines, 2008). Staff's initial fear and realization of a disaster would be considered an internal stimulus, and as it can potentially be a barrier to performance, it must be considered. External stimuli include the disaster itself and the need to mobilize patients, equipment, supplies, and health records to an alternative care site. Evacuation can be compounded by interruption in power, water, and heat and profoundly compounded by inadequate planning and poor execution. The key in nursing education is to understand and train staff on the components of the evacuation plan and to take into consideration the residents' specific needs during an evacuation (Messner & Smith, 1986).

Roy's adaptation model was successfully used in Messner and Smith's (1986) study, which examined the effects of a diagnosis of neurofibromatosis on patients and their families. The key issues identified in the study were the uncertainty for the future, fear of neurodegeneration, recurrence of tumor growth, and concerns of family degeneration and untimely death. Based on these stimuli, the nurse observed patient and family behaviors and then formed a diagnosis to address the psychosocial issues that arise with acceptance of a disfiguring disease. Goal setting focused on effective understanding and acceptance of the condition. Interventions addressed developing the foundation for establishing rapport, promoting

timely intervention in the progression of the disorder, and assisting the patient and family in achieving and maintaining an optimal state of health (Messner & Smith, 1986).

Nurses responsible for the care of patients in a long-term care facility would utilize the same methods to ensure adaptation and optimal health before, during, and after an evacuation. A long-term care facility is characterized as having a unique patient population with challenges that include cognitive impairments, mobility issues, and a population that generally functions best with a consistent routine (Reed, 2006). Nursing interventions must address these needs in planning and training for an evacuation.

The evacuation plan is essential to maintain safety in long-term care facilities, and it must take into consideration the elements that Roy speaks to: survival, growth, and mastery. Survival can be accomplished by developing a program that would be comprehensive and tested by staff. Growth and mastery come from successfully training staff on the process and performing exercises to ensure smooth transitions during disaster response and consideration to the unique needs of the residents. Specific nursing interventions should address adjusting to the disaster mode with ease and the creation and availability of specific checklists used to prepare patients for the evacuation process.

Effective Training

Despite the many challenges, long-term care facilities were tasked with developing, training, testing, and evaluating disaster plans on a regular basis (Grachek, 2006). With regulatory requirements and the many tools available for the task, emergency operations plans were to respond to all potential disasters. All prevention and mitigation measures would be included, and finally, recovery to routine business activities would be defined. The education would need to meet the needs of these facilities and staff while remaining cost-effective,

efficient, sustainable, and engaging. A multidimensional approach to education would maximize learning (Jehning & Spiron, 1990). Education must also address orientation to the facility, periodic testing of the disaster plan in the form of a drill, and a method to evaluate the drill. Case scenarios would then need to be developed to address the identified problems (Federal Emergency Management Agency [FEMA], n.d.). An evaluation of the planning would be best evaluated by performing a debriefing exercise after each educational event. During debriefing, best practice and areas of improvement would be identified and discussed. Action items would be documented and implemented to continue to identify and resolve gaps in disaster planning and performance (FEMA, n.d.)

Education and training must include all staff at all levels. Disaster training must begin with orientation to new staff, continue quarterly in the form of an exercise, and culminate annually in a large comprehensive exercise. FEMA has created terms and definitions for the various levels of disaster training. These levels of training will be utilized in an educational plan for long-term care facilities (FEMA, n.d.).

Orientation

FEMA defines an *orientation seminar* as a low-stress, informal discussion in a group setting with little or no simulation. The seminar is used to provide information and introduce people to policies, plans, and procedures in the organization's comprehensive emergency management plan (FEMA, n.d., p. 7). All new staff hired would participate in the orientation seminar, during which trainers would present all associated documents, equipment, processes and references (FEMA, n.d.). Along with the seminar, new staff would participate in a scavenger hunt to locate the facility's evacuation route signage, evacuation plans, patient equipment push packs, staff supplies, evacuation equipment, patient tracking records, staff recall

lists, communication devices, patient family contact information, and power, gas, and water shut off (Grachek, 2006).

After the orientation seminar, there are four types of drills defined by FEMA. The first, a standard drill, typically tests a single specific operation or function and involves deployment of equipment and personnel. The next is a tabletop exercise, which is done as a group to analyze responses to specific, problem-prone areas and focuses on operational issues and the facility's in-depth problem solving. The final two drills, the functional exercise and the full-scale exercise, are simulated, interactive exercises that test the capability of the facility to manage multiple challenges. The drills differ in that the functional exercise is performed in an emergency operations center, while a full-scale exercise deploys equipment, personnel, roles, and outside agencies including fire, law enforcement, and community emergency management members (FEMA, n.d.).

Annual Education

Each type of drill offers some degree of simulation regarding disaster planning and allows facilities to test their plan. Simulation is described as a method to replace or amplify real experiences with guided experiences in a fully interactive environment (Morrison & Catanzaro, 2010). Simulation can be simple or low fidelity, which includes case studies or scenarios. Case studies may become more advanced and sophisticated, termed *high fidelity*, which includes human patient simulators, or manikins, that are extremely realistic (Eddington, 2011). Regardless of the level of sophistication, simulation provides staff the opportunities to role-play through scenarios to gain insight and understanding of a given situation (Morrison & Catanzaro, 2010).

Based on the benefits simulation provides and the need to drill regularly, long-term care facilities will perform an annual full-scale exercise substituting patients with inanimate objects (Haynes, 2006). This will provide staff the ability to problem solve while minimizing disruption to the residents. A full-scale drill involves all emergency response functions and requires full deployment of equipment and personnel.

The full-scale drill also requires following the hospital incident command system (HICS) model and utilizing the incident commander as the chief running the event (FEMA, n.d.). This particular command model was developed in 2006 and is modeled after the command structures developed by both the military and fire agencies. It is composed of an organizational chart with clearly defined roles and specific duties attached to those roles. It also contains incident response guides, planning templates and an operational log to document all events occurring during the disaster (www.HICScenter.org).

An incident response requires fire, law enforcement, and community emergency management agencies in the exercise to test the support provided to the facility in a true event and promote partnering with these agencies (FEMA, n.d.). The most efficient way to ensure outside agency participation is to align the facility's disaster drill with those performed in the community. At the conclusion of the event, a debrief is conducted to provide an evaluation of the exercise to determine the events that went well, and an opportunity to identify areas for improvement. Those identified areas of improvement must be addressed and a plan must be developed, and retested (FEMA, n.d.).

Train To Deficits

Identified deficits from the debrief would be retested through a tabletop drill, which allows the group to reconstruct a scenario to test the identified deficits and ensure they have been

addressed and resolved. Any changes in response should be reflected in the emergency management plan and updated accordingly (FEMA, n.d.). Tabletop drills will also occur quarterly to allow administration and staff to test one potential challenge in disaster planning and address operations around that challenge (FEMA, n.d.).

Through these various levels of training, nursing staff at long term care facilities will develop the skills required to function effectively during a disaster. As these skills are developed, actual performance in an event will be enhanced thus minimizing the chaos that often ensues during a disaster. Utilizing the Roy adaptation model as the conceptual framework, this training will provide staff in long-term care facilities the skills to best facilitate adaptation to the environment, minimize distress and contribute to their safety and well being of their residents.

CHAPTER FOUR

Results

Evaluation

To determine whether this education plan is effective, an evaluation would need to be performed. The evaluation would need to focus directly on whether the participants received adequate training to perform in a stressful situation. Areas for improvement are often identified in debriefing following an event; this does not necessarily reflect inadequate training, but it may identify inadequate planning or logistics. To evaluate training, there will need to be a method to determine whether knowledge was acquired through the training. The teach-back method will be used for this purpose (Osborne, 2007).

The teach-back method has grown in popularity in the health care provider/patient relationship (Osborne, 2007). It has also shown to be an excellent teaching tool to ensure learners understand new knowledge. It requires them to explain, in their own words, what was taught. If learners are initially unable to articulate the key concepts, those concepts are retaught using a different approach, and then learners are given further opportunities to explain the content until they grasp the concepts (Osborne, 2007). The teach-back method would be particularly useful in the orientation seminar phase because, as a new concept, disaster management may not be adequately grasped after it is initially taught. The teach-back method would be used during content presentation and again 30 days later as the employee assimilates to their workplace environment.

After determining knowledge acquisition, there must be a method to assess whether knowledge was generalized into a clinical scenario. To determine whether staff understands how to perform in an actual disaster, the annual exercise will give them an opportunity to practice.

The addition of formalized evaluators will measure whether the performance reflects mastery of key concepts of evacuation. The California Health Association of Health Facilities (CAHF), within the disaster preparedness program, published *Evacuation for Long-Term Care Facilities*, outlining a complete evacuation scenario, defining the role of evaluator, and providing checklists for evaluators to utilize in order to document performance (CAHF, 2009). The checklists focus on the leadership role during evacuation, staffing and provisions for packing and transportation, proper transmission of health information, communication with agencies and families, placement and tracking of residents, and documentation of security support and site closure upon evacuation.

Performance in an actual or simulated disaster can often be chaotic and stressful; this does not necessarily reflect poor training. The CAHF's easy-to-use checklists cover the key issues of evacuation and reflect whether training has adequately prepared staff and leadership to perform effectively. Omitting key components of an evacuation or poorly prioritizing events would better reflect inadequate training and would require remedial review of evacuation principles.

CHAPTER FIVE

Discussion

Implications for Nursing

Nurses are leading the way in disaster management. They are included in the group known as first responders because patients often arrive at health care settings for primary care after exposure to an agent or contaminant without being treated in the field (NeSmith, 2006). Not only are nurses primary caregivers in these instances, but they are also leaders who are trained to make key decisions in the face of the many challenges of a disaster. They utilize the nursing process to make an overall assessment of the event, prioritize care, and manage the many demands associated with a disaster.

Nursing stewards the continued emphasis of thorough disaster planning. Through planning, nurses can identify all potential events and implement response guides. They participate in disaster drills and evaluations that drive continued preparedness. Finally, nursing provides the ethical framework for decision making in the face of great human loss during devastating disasters (NeSmith, 2006). Nursing leadership must keep disaster planning and emergency operations a priority in health care so disaster victims receive adequate, organized care that anticipates their needs (NeSmith, 2006).

Limitations

Despite this educational plan and the many tools available to develop and execute emergency operation plans, long-term care facilities may continue to struggle with disaster planning and performance. Turnover of both direct caregiver staff and leadership staff at long-term care facilities will create barriers to effective competency maintenance. Also, leadership at individual facilities must make disaster planning a priority. It can often take a backseat to the

many daily operational issues that arise. Federal regulations will continue to require the presence and revision of operation plans, but the actual training, exercises, and evaluations may be suboptimal with time.

Conclusion

Manmade and natural disasters both cause illness and injury that need immediate intervention and care, and health care has become a mainstay in disaster response. Acute care hospitals initially took steps to plan, prepare, and respond to these disasters. Over time and with additional disasters, first recommendations and then regulations were developed for all health care facilities, including long-term care.

Long-term care facilities are faced with unique challenges that include staff turnover and a primarily fragile patient population. They are now required to have emergency operation plans, but often do not train or execute these plans well. Disaster planning education and training must start with orientation of new staff to a long-term care facility and include a regularly scheduled full-scale training exercise involving role-play with equipment, problem solving, and staff mobilization. Finally, education continues as deficits in the training exercises are analyzed and action plans are created to resolve the deficits. Training evaluation methods to ensure learning of key facility evacuation concepts include a teach-back by new staff and placement of designated evaluators to observe and document performance and compliance of processes during a full exercise.

Through implementation of this plan, staff of long-term care facilities can be knowledgeable and prepared for safe evacuations of their residents. Further, through participation in annual drills and follow-up tabletop drills, they will begin to understand the challenges of evacuation and tailor their written plans to meet those challenges.

As Sister Callista Roy's model is based on the human being, adaptation and nursing, these exercises and debriefs will continue to allow long term care facilities to know how to best manipulate and manage the environment to contribute to the well being of the long-term care client during an evacuation.

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Appendix A

Orientation Seminar – Within first 30 days of Employment

- Review Emergency Operations Plan
- Locate Staff Recall List
- Locate site evacuation routes
- Locate and operate emergency transfer equipment
- Locate evacuation documents; patient records, alternative care site location, family notifications.
- Locate emergency patient equipment transfer list
- Locate emergency staff equipment transfer list
- Locate and operate emergency communication devices; radios, cell phones, pagers.
- Locate Emergency agency phone lists; Fire, Law Enforcement, City and County agencies
- Locate and operate power, gas and water shut off
- Locate and operate fire extinguisher

Teach Back, Emergency Operations Plan – 30-90 days of employment

- Explain immediate actions when faced with the following events:
 - Loss of Power
 - Fire
 - Notification for complete site evacuation
- Operate emergency communication devices
- Locate the essential evacuation documentation items
- Describe the plan for evacuation including prioritizing the order of evacuation
- Describe your role in an evacuation

Appendix B

Annual Disaster Exercise

- Determine scenario; coordinate with community disaster drills if possible
- Assign roles including Incident Commander and evaluators
- Develop individualized objectives
- Utilize alternate method to simulate patients
 - “paper” patients
 - stuffed animals
 - manikins
- Simulate true events as disaster exercise plays out
- Document the event with a scribe in command center
- Evaluate command center, operations, response and recovery of event
- Perform debrief
 - Identify successes-“what went well”
 - Identify deficits- “areas of improvement”
- Create immediate actions plans to address deficits, plan a future table top to retest deficits
- Make changes and revisions to Emergency Operations plan based on evaluation outcomes

Appendix C

TableTop Drill – Quarterly Exercise

- Determine scenario/deficit to be tested, best to isolate only one deficit
- Develop objectives for drill
- Schedule tabletop drill for full attendance and participation
- Conduct drill with command and operational staff participation
- Determine if deficit was adequately addressed
- Document tabletop drill outcomes
- Identified resolution of deficit
- Identify any new deficits or areas to test
- Update Emergency Operations plan