
A Comparative Study of Laws, Rules, Codes and Other Influences on Nursing Homes' Disaster Preparedness in the Gulf Coast States

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In 2005, Hurricanes Katrina and Rita devastated several Gulf Coast states and caused many deaths. The hurricane-related deaths of 70 nursing home residents—34 believed drowned in St. Rita's Nursing Home in Louisiana and 36 from 12 other nursing homes—highlighted problems associated with poorly developed and executed disaster plans, uninformed evacuation decision-making, and generally inadequate response by providers and first responders (DHHS, 2006; Hyer, Brown, Berman, & Polivka-West, 2006). Such loss of human life perhaps could have been prevented and certainly lessened if, prior to the hurricanes, policies, regulations, and laws had been enacted, executable disaster guidelines been available, vendor contracts been honored, and sufficient planning taken place. This article discusses applicable federal and state laws and regulations that govern disaster preparedness with a particular focus on nursing homes. It highlights gaps in these laws and makes suggestions regarding future disaster planning. Copyright © 2007 John Wiley & Sons, Ltd.

INTRODUCTION

The Gulf Coast states perennially suffer hurricanes of varying magnitudes, but Hurricanes Rita and Katrina were particularly catastrophic. Their intense ferocity and devastating aftermath led to numerous state and federal investigations that

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Contract/grant sponsor: Borchard Foundation Center on Law and Aging.

exposed deficiencies in federal, state, and local emergency operations systems, as well as institutional policies and procedures for at-risk older adults. In its report to the President entitled *The Federal Response to Katrina: Lessons Learned*, the Department of Homeland Security (DHS, 2006) observed that “effective incident management of catastrophic events requires coordination of a wide range of organizations and activities, public and private” (p. 52). Such interagency cooperation among multiple levels of federal, state, and county government agencies, voluntary organizations, and the private sector is particularly critical to vulnerable elderly populations residing in nursing homes and assisted living facilities.

Amendment X of the US Constitution states that “The powers not delegated to the United States by the Constitution, nor prohibited by it to the States, are reserved for the States respectively, or to the people.” All federal reports after Hurricane Katrina acknowledge that states have primary responsibility for public health protection and that during disasters local fire, police, EMS, and emergency management personnel must provide the first lines of defense. Disaster management remains a local issue until a jurisdiction’s capabilities have been exhausted and its chief local official requests county or state assistance. Similarly, when the state’s capabilities are strained or the disaster is expected to exceed the state’s resources, its governor may request federal assistance under the 2000 Robert T. Stafford Disaster Relief and Emergency Assistance Act (Public Law 93-288), which provides federal resources to supplement state and local resources in carrying out disaster relief and recovery activities.

OIG Investigation of Nursing Home Hurricane Preparedness

The federal Centers for Medicare and Medicaid Services (CMS) are charged with overseeing federal standards for nursing homes. As part of the post-Katrina review within the Department of Health and Human Services (DHHS, 2006), the Office of the Inspector General (OIG) investigated and reported on the adequacy of CMS oversight in *Nursing Home Emergency Preparedness and Response During Recent Hurricanes*. The investigation yielded five findings. First, the OIG determined that compliance rates for Gulf State emergency plans and training of nursing home personnel met Federal standards. Second, the decision of nursing home administrators to evacuate or shelter residents in place was based on multiple factors, such as weather conditions, facility structure and location, and health status of residents. Third, all nursing homes evaluated by OIG had hurricane-related problems, regardless of whether they sheltered in place or evacuated. Fourth, nursing home administrators and staff had not always followed emergency plans, and plans often lacked provisions that the OIG deemed important. Fifth, lack of collaboration between local and state emergency responders and nursing homes adversely affected emergency planning.

In addition, the OIG identified 25 elements of disaster planning it viewed as critical and used these elements to review the 2005 disaster preparedness plans of 20 hurricane-impacted nursing facilities. The provisions were developed from the OIG review of professional publications, expert opinions, and state requirements and guidelines. OIG grouped the 25 provisions into three broad categories: (1) *General Provisions* including seven provisions—*Hazard Analysis, Direction and Control,*

Decision Criteria, Communication Coordination, Staff Family Members, Community Coordination, and Specific Resident Needs; (2) Provisions for Sheltering in Place including seven provisions—*Securing the Facility, Emergency Power, Food Supply, Water Supply, Staffing, Medication, and Serving as a Host Facility*; and (3) *Provisions for Evacuation* including 11 provisions—*Transportation Contract, Evacuation Procedures, Host Facility Agreement, Food Supply, Medications, Transfer of Medical Records, Staffing, Residential Personal Belongings, Reentry, Water Supply and Evacuation Route*.

The OIG report concluded that CMS should take responsibility for improving nursing homes' hurricane preparedness through the establishment of comprehensive emergency preparedness guidelines. However, the OIG did not incorporate in its report the central role of states in licensing and regulating nursing homes, as well as the state and local role as first responders during disasters. Because the role of the states is not addressed by OIG, our goal was to identify gaps and limitations in the state laws and regulations in eight hurricane-prone Gulf Coast states (Alabama, Florida, Georgia, Louisiana, Mississippi, North Carolina, South Carolina, and Texas). We examined the relationship between the existing state laws and the five key areas identified by the OIG investigation, evaluated the importance of what we determine to be the six key OIG provisions in nursing home disaster preparedness and response, and considered the effects of state laws on facilities caring for nursing home residents during disasters.

METHOD

The collection and review of documents began in June 2006, nine months after the devastating 2005 hurricanes. The laws and regulations governing emergency preparedness and operations of nursing homes during disasters of the eight states noted above were available via the Internet. The keywords *disaster* and *disaster planning* were used to locate the pertinent regulatory information, applicable statutes, and administrative codes on each state's official website or web portal (see Table 1).

Ease in accessing state laws and regulations by this method varied. For example, Florida's Sunshine Laws (Ch. 286) and public record laws (Ch. 119) made it easy to locate this state's statutes and administrative codes. In contrast, the Texas' Administrative Code website did not display chapters or subsections in their entirety. In fact, individual paragraphs of the laws were placed several levels deep (seven levels, on average), making it difficult to obtain comprehensive information about Texas laws.

Relevant state legislation and administrative codes were reviewed twice. The first review served two purposes: to identify applicable laws and rules and to eliminate laws and rules that were outside the parameters of the review. A second independent review was conducted to confirm the findings of the first review and to include such additional search terms as *fire* and *emergency*. The second search yielded results consistent with those from the first. Table 2 provides an overview of the Gulf Coast states' laws or regulations and how closely they mirrored the provisions set forth by the OIG.

The two reviews resulted in a classification of state laws as full match or partial match with the OIG provisions. A full match required that the regulation or code

Table 1. Website addresses for laws and regulations affecting Gulf State nursing homes

	Alabama
The Code of Alabama 1975	http://alisdb.legislature.state.al.us/acas/ACASLogin.asp
Alabama Administrative Code	http://www.alabamaadministrativecode.state.al.us/alabama.html
	Florida
Florida Statutes	http://www.leg.state.fl.us/Statutes/
Florida Administrative Code	http://fac.dos.state.fl.us/
	Georgia
Georgia Code	http://www.legis.state.ga.us/cgi-bin/gl_codes_detail.pl?code=1-1-1
Rules and Regulations of the State of Georgia	http://www.sos.state.ga.us/rules_regs.htm
	Louisiana
Louisiana Laws	http://www.legis.state.la.us/searchweb.asp
Louisiana Administrative Code	http://www.state.la.us/osr/lac/lacsublist.htm
	Mississippi
Mississippi Code of 1972	http://www.sos.state.ms.us/pubs/MSCode/
Rules, Regulations, and Minimum Standards	http://www.msds.state.ms.us/msdhsite/_static/30,0,83,60.html
	North Carolina
North Carolina General Statutes	http://www.ncga.state.nc.us/gascripts/Statutes/StatutesTOC.pl
North Carolina Administrative Code	http://ncrules.state.nc.us/ncac.asp
	South Carolina
South Carolina Code of Laws	http://www.scstatehouse.net/code/statmast.htm
South Carolina Code of Regulations	http://www.scstatehouse.net/coderegs/statmast.htm
	Texas
Texas Statutes	http://www.capitol.state.tx.us/statutes/statutes.html
Texas Administrative Code	http://www.sos.state.tx.us/tac/index.shtml

captured the OIG provision as specified. A partial match addressed an aspect of the provision. For example, the provision for Community Coordination, defined as “Specifies clear communications protocols and backup plans,” matched Florida law and was a partial match with Georgia and Louisiana. Any OIG provision found to be missing from state laws or regulations does not mean that facilities in the State excluded these elements from comprehensive disaster/emergency planning. We simply indicate that the laws and rules in effect at the time of this review did not contain language that specifically mirrored the OIG provision. We noted whether the laws or regulations were changed as a result of the 2005 hurricane season. Existing laws were then compared with the five key findings reported by the OIG investigators.

The OIG made no attempt to rank order the 25 provisions it identified as essential to disaster planning according to importance nor did it ask experts to do a follow-up evaluation. To determine the appropriateness and comprehensiveness of the final provisions selected by the OIG we examined whether any of the 25 provisions were more central than others in ensuring resident safety and well-being. Two groups of experts who had had direct responsibility for providing care or services to nursing home residents during the 2005 hurricane season were asked to evaluate the relative importance of each provision. The first group included 18 attendees of the American Health Care Association (AHCA) 2006 annual nursing home provider conference, who came from five hurricane-prone states and who represented 7,034 total licensed

Table 2. Comparison of OIG suggested provisions with Gulf Coast states' laws and regulations. Expert rankings of importance of OIG provisions

	AL	FL	GA	LA	MS	NC	SC	TX	Expert rankings
<i>General Provisions</i>									
1. Hazard Analysis—details specific vulnerabilities of the facility, such as close proximity to water and low elevation; accounts for various threats to the facility			PM	PM				PM	H
2. Direction and Control—establishes a command post in the facility; defines management for emergency operations			PM					PM	H
3. Decision Criteria—includes factors to consider in deciding to evacuate or shelter in place			PM					PM	M
4. Communication—specifies clear communication protocols and backup plans			M	PM	PM				M
5. Staff Family Members—indicates whether staff family can shelter at the facility and evacuate									M
6. Community Coordination—procedures for working with local emergency manager; submitting plan			M				M		M
7. Specific Resident Needs—contains lists that include resident medical and personal needs							PM		M
<i>Provisions for Sheltering in Place</i>									
8. Securing the Facility—details measures to secure building against damage; especially for buildings sheltering in place			PM						H
9. Emergency Power—specifies backup power, including generators and accounts for maintaining a supply of fuel			M				M		H
10. Food Supply—details the amounts and types of food on hand			M				M		M
11. Water Supply—details having potable water available			M				M		M
12. Staffing—designates key personnel in emergencies and preparedness assignments									M
13. Medication—specifies maintaining extra pharmacy stocks of common medicines			PM	M	PM		PM	PM	M
14. Serving as a Host Facility—describes hosting procedures and details ensuring 24-hour operations									M
<i>Provisions for Evacuation</i>									
15. Transportation Contract—includes current contract(s) with vendors for transportation			M					PM	M
16. Evacuation Procedures—details contingency plans, policies, roles, responsibilities, and procedures			PM						H
17. Host Facility Agreement—includes current contract(s) with facilities, relocation to “like” facilities								PM	H
18. Food Supply—describes adequate supply and logistical support for transporting food									M
19. Medications—describes logistics for moving medications—including specification for moving them under the control of a registered nurse									M
20. Transfer of Medical Records—details having the resident's medical records available; describes logistics for moving medical records									M
21. Staffing—specifies procedures to ensure staff accompany evacuating residents									M
22. Residential Personal Belongings—includes list of items to accompany residents									M
23. Reentry—identifies who authorizes reentry, procedures for inspecting facility, and details transportation from the host facility									L
24. Water Supply—specifies amount of water taken and logistical support for transporting water									L
25. Evacuation Route—identifies evacuation routes and secondary routes, including maps and specifies expected travel time.									M

M = match with OIG suggested provision and existing state regulation.

PM = partial match OIG suggested provision and existing state regulation.

An empty cell indicates the state has no regulation that matches or partially matches an OIG suggested provision.

beds. The second group included 20 members of the Florida Health Care Association (FHCA) Disaster Preparedness Committee, a working group of select professionals from various agencies and organizations who meet regularly throughout the year to evaluate and refine Florida's nursing home disaster plan. Both groups completed a questionnaire, in which they rank ordered all the provisions within each of the OIG specified groups—*General*, *Sheltering in Place*, and *Evacuation*—in order of most to least important for disaster planning. They also provided information about their job, type and location of facility, total licensed bed capacity, and whether they evacuated or sheltered in place during the 2005 hurricanes.

The mean and standard deviation for each item were used to obtain an average ranking. Because no significant differences were found in the rank ordering of the provisions by the AHCA and FHCA groups, the findings for the two groups were combined. In rank ordering each provision, we created three groups: high, medium, and low. The last column of Table 2 provides the rankings of these experts on each of these 25 provisions. Each of the seven provisions under both the *General* and *Sheltering in Place* categories was classified as high (1–2), medium (3–5), or low (6–7). Similarly, each of the 11 provisions under the *Evacuation* category was classified as either high (1–3.49), medium (3.5–7.49), or low (7.50–11).

Finally, we developed a structured telephone interview protocol of 21 open-ended questions to ask each of the Gulf State nursing home associations about any changes in its state disaster plans since the 2005 hurricanes, its perceptions of their facility's preparedness, the need for state regulatory changes, and its relationship with their state's Public Health and Medical Services Emergency Support Function (ESF-8).

DISCUSSION OF LAWS AND REGULATIONS AND OIG KEY FINDINGS

In this section we review each of the five key OIG findings in relation to the state laws and regulations of the eight Gulf Coast states. It is important to note that the OIG report frames its findings and its criticism of current preparedness plans within CMS's regulatory authority under Medicare (Section 1819(f)(1)) and Medicaid (Section 1919(f)(1) of the Social Security Act). These sections allow the federal government to establish basic requirements for nursing home participation in Medicare and Medicaid and to enforce these requirements through inspection and fines. The regulatory requirements established by CMS have a critical economic impact on nursing homes because those failing to comply with the federal conditions of participation cannot bill Medicare or Medicaid for services provided to eligible enrollees. In 2004, 77.9% of nursing home revenue was derived from Medicare or Medicaid funds (Harrington, Carillo, & LaCava, 2006).

It should also be remembered that the five key OIG findings are a federal perspective of the 2005 CMS nursing home emergency preparedness regulations. We contend that states have a critical planning role before disasters and have the primary responsibility of managing the initial emergency response and initial recovery efforts. Therefore, we detail the state emergency preparedness require-

ments and then compare the state rules and regulations to the 25 provisions the OIG asserts should be present in all nursing home disaster plans.

Emergency Plans and Staff Training

The CMS regulations on emergency planning and staff training in effect during the 2005 hurricanes (42 CFR 483.75[m]) required that “the facility must have detailed written plans and procedures to meet all potential emergencies and disasters, such as fire, severe weather and missing residents.” Furthermore, the facility was to meet the applicable provisions of the 2000 edition of the Life Safety Code of the National Fire Protection Association under Emergency plans and procedures (42 CFR 483.70 [a]). Under rules issued to state inspectors as “Interpretive Guidelines (42 CFR 483.70[a]),” the plans were to include reference to fires and drills and relocation plans in the event of a fire. This included defining a process of preparing an emergency preparedness management plan that incorporated senior managers and other staff in the planning, developing, implementing, activating, and evaluating an emergency preparedness plan for a health care facility.

At present, four states specify elements that have to be included in a disaster plan—Florida, Louisiana, Mississippi, and South Carolina—but only Florida and Louisiana require state-level interagency cooperation in developing the criteria. On a more fundamental level, however, it is not clear just how nursing home personnel are to use the plan during a disaster. The OIG report notes that nursing home administrators did not use their plans as “practical manuals” to guide them in responding to the hurricanes (DHHS, 2006, p. 17). It is imperative that disaster plans are executable during a disaster. Yet, although most nursing home disaster preparedness guides are temporally organized, the tasks within each section are typically not ranked in order of importance or presented in a way that facilitates task completion.

CMS regulations entitled “Staff education and drills 42 CFR 483.75[m]” require that “The facility must train all employees in emergency procedures when they begin to work in the facility, periodically review the procedures with existing staff, and carry out unannounced staff drills using these procedures.” Clearly, during annual state inspections of nursing homes, surveyors look for evidence of such training because the OIG report notes, “Nursing homes were cited for training deficiencies when staff were unable to demonstrate knowledge of procedures to surveyors, or when they were unable to produce records demonstrating that they provided training to all staff at the frequency required” (DHHS, 2006, p. 35).

Although the OIG determined that Gulf State emergency plans and training of nursing home personnel generally met CMS standards, it recommended that CMS “should consider strengthening Federal certification standards for nursing home emergency plans by including requirements for specific elements of emergency planning” (DHHS, 2006, p. 21). The OIG further recommended that a core set of required elements be developed by CMS for inclusion in all disaster nursing home plans and that nursing homes develop additional elements that specifically address local risks.

All Gulf Coast states require nursing homes to train their staff in emergency procedures and to conduct emergency drills either once or twice a year. Historically,

fire drills are the most common and frequently conducted emergency drill. The fire code is typically enforced by local fire inspectors, who routinely evaluate buildings for safety (smoke detectors, sprinkler systems, fire extinguishers) and conduct fire drills (practice). For most states, an equivalent mechanism for enforcing nursing home disaster preparedness is not as clearly defined and enforceable as the fire code. In part, this is likely because major disasters rarely occur, whereas fires potentially pose an equal threat to resident life but happen with far greater frequency.

Although states do require nursing homes to train staff in basic emergency preparedness, considerable variability exists. For example, Alabama and Texas require that new employees receive disaster training and that all facility staff periodically review emergency procedures. Florida requires that facilities have a disaster education plan for staff, that new employees receive a minimum of one hour disaster training within 30 days of hire, that facility plans include information about chain of command, and that disaster preparedness policies and procedures be reviewed at least annually. Georgia requires that disaster plans include assignment of staff responsibility for care of residents during a disaster. Louisiana specifies provisions for management of staff and continuity of essential care to residents. Mississippi mandates that staff semi-annually review the facility disaster plan. North Carolina requires employee training to be conducted at time of hire and annually thereafter. South Carolina specifies that employees be trained to care for mass casualties resulting from natural or human-made disasters and that provisions be made for continuity of care, and that each employee receive instruction on how to respond to various types of disaster.

Evacuation Decision-Making

The OIG report suggests that nursing home decisions to evacuate or shelter in place include specific factors, such as facility location and characteristics, hurricane category, and health status of residents. Both the OIG investigation and our research revealed that during an actual disaster nursing home administrators frequently made decisions without seeking consultation from their local emergency management offices. Some providers who worked for facilities that were part of larger corporations managing and/or owning nursing homes reported that they needed to obtain permission from their home offices to evacuate to another facility. Under current policies and laws, nursing homes are responsible for providing transportation for evacuation with private contracts and private financing. The decision to evacuate requires central office negotiation and approval, as well as resources, to carry out the evacuation. In some cases, home office employees in 2005 were headquartered in a state other than that of the impacted nursing home and thus had to rely on long-distance reports of climactic activity and disaster declarations to inform their decision-making.

At present, only Georgia law, in very general language, addresses decision-making in requiring nursing home disaster plans to include information about “who, what, when, where, and how.” All of the states, including Georgia, are silent on requiring training for nursing home administrators on how to make informed decisions during a disaster.

Decision-making is a complex science, one not routinely taught to nursing home administrators. Disaster decision-making requires multiple considerations and evaluations of residents, staff, physical plant, and resources. As the disaster evolves, access to resources may be compromised and residents' physical and mental health conditions can change, making response to a disaster increasingly more challenging. Some key activities that are necessary in a disaster cannot be easily replicated during practice drills. Although some training in evacuation decision-making can be obtained from tabletop exercises, decisions are often made under less than ideal conditions during a real disaster.

Problems Experienced during Hurricanes

The OIG report notes that all nursing homes experienced problems during the 2005 hurricanes. Problems with evacuation included longer than anticipated travel time; medication, food, and water needs of residents; complicated travel logistics; inadequate preparation of host facilities; difficult return of residents to their home facilities; and vendors not always honoring transportation contracts. Notably, nearly half of the evacuating nursing homes reported that residents had experienced adverse mental and physical health problems as a consequence of being evacuated to another facility. Given that it is critical that transportation for residents is available during disasters, nursing home administrators have called for greater collaboration among transportation providers and have recommended the development of community transportation plans (DHHS, 2006).

At present, the regulatory language that defines the scope of responsibility for resident transportation varies. Currently, only three states have regulations that address transportation of nursing home residents during a disaster. Florida requires that nursing homes have both pre- and post-disaster transportation arrangements in place. Georgia and Louisiana require that facilities make "transportation arrangements" or have a plan for "coordinating transportation" services, respectively. Although the OIG includes a provision specifically addressing transportation, it only requires that nursing homes have a current contract with transportation vendors. However, the 2004 and 2005 hurricane seasons clearly demonstrated that a current contract with a vendor does not guarantee availability of transportation during a disaster.

During the hurricanes, a common problem encountered by nursing homes with prearranged contracts for routine ambulance and bus services was the lack of follow through with transportation. Because similar agreements had been negotiated with multiple nursing homes and hospitals in the same area and hospitals had been given priority, some nursing home residents were left without emergency transportation. Local Emergency Operations planning representatives should work with the ESF-1 (Transportation) and the ESF-8 (Health and Medical Services) in considering surge impact zones (i.e. areas at high risk for flooding) and facility emergency transport planning with emergency transportation providers. To evacuate from a nursing home facility to a safe area, appropriate transportation for residents, staff, and family members is required. As such, regional emergency operations must identify and address competition for the transportation.

Although nursing homes that had sheltered residents in place reported fewer difficulties than those that had evacuated, two of the nine facilities that had sheltered in place experienced problems of a sufficient magnitude to force them to evacuate after the storm. Contributing factors included lack of electrical power, water, food, and supplies, and an inability to maintain adequate staffing levels. While evacuation of residents after a storm may not be common, it is important that facilities have procedures in place to alert families about resident location and the local EOC about evacuation after the storm has passed. No states currently have regulations speaking to these needs.

Emergency Plans Not Always Followed, Often Lacking OIG Provisions

In interviews with the OIG, nursing home administrators reported they had deviated from their written disaster plans based on their past experiences, knowledge, or changing conditions that had threatened resident safety and needs. Further, the OIG report points out that nursing homes “deviated from or worked beyond their emergency plans during the 2005 hurricanes, either because the plans were not updated with current information or did not include instructions for a particular circumstance” (DHHS, 2006, p.16) and suggests that lack of adherence to established plans and procedures was not appropriate, even if the deviation resulted in a shorter evacuation time.

The emergency preparedness management plan may incorporate senior managers and other regional or national staff in the planning, developing, implementing, activating, and evaluating of a nursing home’s emergency preparedness plan. Once again, a forum for independent decisions must be weighed against community interest and obligation. Negotiating these responsibilities is not easy, but the cost of poor planning and lack of coordination may be fatal, as during Katrina, when 70% of the dead in New Orleans were over age 60 (Simerman, Ott, & Mellnik, 2005).

During Katrina, there were many reasons why some nursing home disaster preparedness plans failed. Flexibility from the OIG provisions may have been warranted in response to the hurricane’s impact, and deviation from the nursing home plan may have been the best response at the time. However, plans also failed when local or state emergency operations centers commandeered ambulances, buses, fuel, ice, and other resources. In one instance reported at the 2006 FHCA annual conference by a for profit, multi-facility owner of nursing homes in the Gulf Coast states, the company had contracted with a private company and paid to have supplies and fuel delivered to its nursing homes in Mississippi. Once in Mississippi, the fuel was commandeered by the state EOC, leaving the private nursing home unable to access the resources paid for by its parent corporation and also ineligible for EOC-provided fuel because the Stafford Act precludes most EOC money from being distributed to private corporations.

As indicated earlier, during a state of emergency, federal and state laws allow for the commandeering of resources by the emergency operations and/or the Federal Emergency Management Agency to ensure that public health and safety are maintained. However, this has jeopardized the private responsibilities of nursing homes to ensure the health and safety of their residents.

Collaboration between Emergency Responders and Nursing Homes

The 2005 CMS regulations (42 CFR 483.75[m]) required that nursing home “emergency plans must be coordinated with state and local plans. The facility must communicate, periodically review, make the plan available, and train the staff.” The OIG recommends that CMS should encourage communication and collaboration between state and local emergency entities and nursing homes. As of 2007, however, only three states—Florida, Louisiana, and South Carolina—have laws that require nursing homes to have procedures for working with local emergency operations centers.

After September 11, 2001, Congress created the Department of Homeland Security to improve the ability of local, state, and federal agencies to respond and coordinate responses to emergencies. This department, in turn, established a National Response Plan designed “to align Federal coordination structures, capabilities, and resources into a unified, all discipline, and all-hazards approach to domestic incident management” (DHS, 2004, p. i). All state and local emergency operations centers are expected to “standardize incident management protocols that all responders use to conduct and coordinate response” (DHS, 2004, p. 21). State and local disaster response should occur within a pre-defined management system that creates a unified command structure with 17 specified emergency support functions (ESFs). Thus, in every state, the ESF-8 should coordinate the preparedness, response, and recovery activities for all health care services during state-wide disasters such as hurricanes.

Table 3 reflects three important insights into both the complexity and variability of the Gulf Coast states' emergency management organizational structures: (1) all

Table 3. Gulf Coast state emergency management systems

State	Number of counties	ESF structure?	Lead agency for ESF-8
Alabama	67	Yes	Department of Health
Florida	67	Yes	Department of Health
Georgia	159	Yes	Human Resources
Louisiana	64 parishes	Yes	Department of Health and Hospitals (DHH) and Louisiana State University Health Sciences Center (LSUHSC)
Mississippi	82	Yes	Department of Health
N. Carolina	100	Yes	Department of Health and Human Services
S. Carolina	46	Yes	Department of Health and Environmental Control
Texas	254; *organized into 24 disaster districts within 8 regions	Yes	Department of State Health Services

*Organized into 24 disaster districts within 8 regions.

Emergency Management Assistance Compact. (n.d.). *State agency summaries*. Retrieved February 27, 2007, from <http://www.floridadisaster.org/EMIT/Accreweb/Documents/Operations/Logistics/EMAC%20Guidebook%202002/summaries2002.pdf>.

Louisiana Office of Homeland Security. (2005). *State of Louisiana Emergency Operations Plan*.

Texas Department of State Health Services and Center for Consumer and External Affairs. (2005). *Crisis and emergency risk communication guidelines*.

Florida State Emergency Operations Center. (2007, February). *Region IV ESF8 Unified Planning Coalition regional planning meeting*. Tallahassee, FL.

states have adopted a uniform command structure with emergency support functions, ESF-8, as the public health and medical services function; (2) the lead agency for ESF-8 varies and reflects the organization of health services within the state but generally has the state health department at the lead; and (3) the sheer number of counties in each state, where local responsibility is initiated, suggests that states are challenged to provide consistent emergency response and to coordinate local response with state plans.

Hurricanes Katrina and Rita highlighted the weakness of state coordination, and states are now recognizing their need to improve emergency management. For example, Texas has organized its 254 counties into a far more reasonable 24 regional units. An executive order further requires that

the Emergency Management Directors (County Judges and Mayors) within each of the state's 24 Councils of Government shall establish a Regional Unified Command Structure, and appoint a single Incident Commander for the Regional Unified Command Structure. Each Incident Commander will be the operational commander within the region during a disaster response, including a mass evacuation (Perry, 2006).

Historically, emergency management has focused on hospitals (Hyer *et al.*, 2006). Thus, nursing homes have not been integrated into the larger public health emergency response systems and are not generally part of the emergency operations response at the state or local level. Prior to Katrina, only two of the eight Gulf Coast states—Florida and Louisiana—recognized the long-term care provider association as a partner within the ESF-8 function. At a post-Katrina Gulf-coast regional meeting of state nursing home associations to improve hurricane preparedness, association directors recognized the importance of the emergency management structures (Hyer *et al.*, 2006). After the regional meeting, the long-term care provider associations in Alabama, Mississippi, and Texas became recognized health care providers in their respective ESF-8 state operations. Similarly, long-term care providers in Georgia, South Carolina, and North Carolina are now working with their state EOCs for improved disaster preparedness. Because EOCs manage evacuations prior to the event and help restore services after disasters, it is vital that nursing homes have a recognized standing within EOCs.

As the OIG report points out, it is important that the local emergency management and nursing homes build a relationship prior to a disaster so that the expectations and responsibilities of each entity are clear. If EOCs have the most up-to-date knowledge about the impending disaster, understand the residents' needs, and have an established relationship with the nursing homes, the nursing homes, in turn, will request EOC information, appeal for needed resources, and seek EOC input when making decisions to stay or evacuate during disasters. However, prior to Hurricane Katrina, only three states—Florida, Louisiana and South Carolina—required review of nursing home disaster plans by emergency managers.

As of June 1, 2006, after Hurricane Katrina, Louisiana had enacted the strongest law with regard to review of nursing home disaster plans by state and local officials: its Department of Health and Human Services must review and approve all nursing home disaster plans at the state, not local, level. Florida also revised its review process after Hurricane Andrew in 1992, specifying that the local EOC is responsible for reviewing the disaster plan and coordinating with the State Department of Health, Agency for Health Care Administration, Department of Community Affairs, and Department of Elder Affairs. The local emergency management review in

Florida varies by county, but all counties recognize their role in providing formal approval of nursing home plans. Four states—Florida, Louisiana, North Carolina, and South Carolina—specify Division of Emergency Management or EOC oversight and/or approval for the disaster plans, and three states—Florida, Georgia, and Louisiana—specify frequency of the disaster plan review.

The corporate for-profit ownership structure complicates the emergency preparedness debate because the Stafford Act, which provides federal emergency assistance after disasters, limits disaster funds to local and state governments and not-for-profit entities. At present, providing assistance to nursing home residents is not included in the plans of state emergency operations except in Florida, where the Florida Health Care Association is a formal partner with the EOC and is included in the state plan (DHHS, 2006; Hyer et al., 2006). In other states, local emergency agencies often classify nursing homes as businesses rather than health care facilities. To further complicate matters, for-profit nursing homes encounter additional challenges in communicating their health care status, even though they provide care to large numbers of Medicare- and Medicaid-supported residents (Hyer, Brown, Bond, & Polivka-West, 2005).

Recognizing the need to coordinate disaster response at the local and state levels, the OIG urges CMS to “encourage communication and collaboration” between state and local emergency entities and nursing homes (DHHS, 2006, p. 28). However, as noted earlier, although nursing home disaster decision-making should be done in collaboration with the EOC, requiring a “relationship” is problematic when potentially only one entity is subject to CMS regulations. It is the states, not the federal government, that will establish local EOC responsibility to help coordinate the evacuation of nursing home residents.

OVERVIEW OF OIG PROVISIONS

As noted earlier, the OIG views each of the 25 provisions it developed for critiquing nursing home preparedness plans as equally important. In the next section we review the top six provisions, as ranked by our two groups of experts from AHCA and FHCA. These provisions warrant further discussion because of their importance in disaster planning and response. Within the *General Provision* category, we discuss the provisions of *Hazard Analysis* and *Direction and Control*; within the *Provisions for Sheltering in Place* category, we explore the provisions of *Securing the Facility* and *Emergency Power*; and within *Provisions for Evacuation*, we examine the provisions of *Evacuation Procedures* and *Host Facility Agreement*.

General Provisions

Within the *General Provisions* category, our experts ranked *Hazard Analysis*, which details such specific facility vulnerabilities as close proximity to water and low elevation, as a top priority; this was closely followed by the provision of *Direction and Control*, which suggests establishing a command post in the facility and defining management for emergency operations.

Hazard Analysis

The two groups of experts also indicated that hazard analysis for nursing homes was critically important in disaster planning. However, of the eight states reviewed, only Florida addressed this provision. Although Florida law does not require that a hazard analysis be conducted, individual nursing home disaster plans contain information that speaks to this provision. Florida EOCs provide nursing home administrators with updated storm surge zone maps and include information on the risk of flooding in the area of the facility. These types of hazard are included in the annual EOC review of nursing home plans.

States, not the federal government, regulate building codes. Florida laws specify that structural standards for roofs, exterior units, and the wind load design of building structures must be designed in accordance with the state building code. As a result of Hurricane Andrew in 1992, building codes were strengthened to address the risk of hurricanes. Individual jurisdictions may have more stringent local codes but no jurisdiction can have lower standards. As expected, the highest wind requirements are found in Miami-Dade and Monroe counties, the areas most impacted by Hurricane Andrew. Local code requirements vary for the state's other counties. In 2006, Florida passed legislation requiring the counties on the northern coast of the Gulf of Mexico to comply with the stronger hurricane-specific coastal building code requirements.

Prior to the Florida 2004 hurricane season, an inland location was thought to offer substantial protection from Category 4 or 5 hurricane force winds. However, after a number of hurricanes during 2004, it was recognized that this was not the case, for winds did not dissipate quickly as storms progressed inland and rain saturated areas experienced significant flooding. In New Orleans, deaths of nursing home residents were a result of flooding, not the wind generated by Hurricane Katrina. In addition to changing weather conditions, knowledge of the flood-zone areas, tides, and the potential for storm surge is paramount when deciding whether and when to evacuate. Familiarity with the strengths and weaknesses of the building (e.g. types of windows and protective treatments, age of structure, safe shelter areas) provides administrators with additional vital information that helps decision-making in evacuation or sheltering in place.

Direction and Control

OIG recommends that nursing homes "Establish a command post in the facility [and] define management for emergency operations" (DHHS, 2006, p. 35). Recognizing the importance of creating a command structure response within the nursing home, the OIG review of nursing home preparedness plans assessed whether nursing home plans "established a command post in the facility that defines management for emergency operations" (DHHS, 2006, p. 35). Although no Gulf Coast state had specific requirements on direction and control during an emergency, the OIG found that 75% of the nursing home plans reviewed after 2005 met the requirement, presumably because they included the organizational chart required by current CMS regulations.

Provisions for Sheltering in Place

This is an emerging area of concern for nursing homes that lack substantive federal and state directions and requirements. The nursing homes' responses to more stringent sheltering in place requirements have evolved since the 2004–05 hurricane seasons, but these practices have not been translated into federal or state laws. The OIG report emphasizes evacuation over sheltering in place, but this is an area that continues to need the development of best practices. Within this category, the highest-ranked provisions were *Securing the Facility* and *Emergency Power*. Five states had laws that matched or partially matched the OIG provision *Securing the Facility*, which includes measures to secure the building from damage, and six states had laws that directly addressed the provision of *Emergency Power*, which specifies the need to have back-up power, such as generators and fuel.

Securing the Facility

Securing the Facility is closely related to the top-ranked general provision *Hazard Analysis*. Information provided from a hazard analysis about the environment and facility structure informs decisions about how best to secure the facility. Many physical plant improvements suggested by the OIG would require major funding increases from Medicaid programs to cover new or more powerful generators, the rewiring of facilities, and a broad range of technical services. Because nursing homes are largely funded by Medicaid, state legislators have resisted these types of physical plant requirement and funding allocation. At present, state laws in Florida and North Carolina meet this OIG provision; Alabama, South Carolina, and Texas are partial matches.

Emergency Power

All nursing homes are vulnerable to loss of electrical power from hurricanes, a major hazard for nursing home residents. Not only do many residents rely on electrically powered equipment, but loss of air conditioning can result in heat stroke and death. Lack of power is a major reason why nursing homes evacuate after a hurricane. Utility companies prioritize power restoration, with highest priority for hospitals, police, fire and sewage. This results in long delays for nursing homes, which often provide skilled nursing care for patients on ventilators, dialysis, and other high acuity needs. No state or federal laws require utility companies to prioritize nursing homes for service. In Florida, the FHCA, in concert with the state EOC, developed a strong partnership with one of the major utility companies, resulting in shortened time for power restoration since 2004, but there has been no support to pass Florida legislation requiring a prioritization for nursing homes.

Louisiana and Mississippi laws are silent on emergency power, but the other six states had laws that directly matched with this provision. For example, in Florida nursing homes are required to have a Level 1 Emergency Power supply system to support the basic life safety systems such as ventilators, fire alarms, egress lighting, and the nurse call system. A nursing home's generator does not have to have a permanent installation, but there are requirements for fuel supply both on hand and

for contracted delivery. The nursing home's emergency generator has to meet the NFPA 99 safety requirements.

However, as in the other states, there is no requirement for nursing homes in Florida to have generator power for heating and cooling systems. There has been a proposed change considered for Florida's Building Code for newly built nursing homes to have an electrical service entry for the normal branch electrical system that would allow a quick connection to a temporary electrical generator. The estimated cost of a new generator for full lighting and air conditioning would be about \$150,000 per nursing home but the estimated cost of the "quick connect" is between \$15,000 and \$20,000. States should consider planning on a statewide basis for both the power restoration status of nursing homes and support for expanded emergency generator power.

Provisions for Evacuation

The highest-ranked provisions in this category were *Evacuation Procedures* and *Host Facility Agreement*. *Evacuation Procedures* includes detailed contingency plans, policies, roles, responsibilities, and procedures; *Host Facility Agreement* includes current contracts with facilities and ability to relocate to "like" facilities. Only Florida law partially matched with both of these provisions.

Evacuation Procedures

Evacuation procedures should include detailed plans for evacuating residents, based on their level of acuity. However, no requirements or laws governing evacuation protocols or priorities exist based on the acuity level of individuals being evacuated. Furthermore, the risks and benefits are unclear regarding evacuating frail, elderly, or disabled persons from nursing homes to receiving facilities across specified distances by various modes of transportation.

Host Facility Agreement

This provision was ranked as a critical concern because of the importance of ensuring a safe, acceptable facility for evacuees. Although Florida has a policy stating that nursing homes should evacuate to a "like" facility, no specific law incorporates this requirement. Our interviews with Gulf Coast state nursing home associations revealed concerns that nursing homes may have multiple agreements to be a receiving facility, but that when the time comes to receive evacuees they will not be able to honor all agreements. Additionally, facilities within a corporate structure may plan to evacuate their residents to another company facility. To fulfill the plan, frail, ill, and disabled residents may be moved across excessively long distances.

CONCLUSIONS

In this article, we have compared existing federal regulations with the laws and regulations of the eight Gulf Coast states to identify how states regulate disaster

preparedness. We focused our state review on the five key findings emphasized in the OIG report and on the six OIG provisions ranked highest by our FHCA and AHCA experts. The intent of the OIG investigation was to identify problems experienced by facilities when attempting to execute their disaster preparedness plans, challenges encountered by administrators responsible for evacuation decision-making, and difficulties that occurred when facilities did not coordinate evacuation or sheltering activities with emergency responders. Based on their findings, the OIG made two key recommendations: (1) CMS should strengthen federal certification standards for nursing home emergency plans by including requirements for specific elements of emergency planning and (2) CMS should encourage communication and collaboration between state and local emergency entities and nursing homes.

Extensive variability was found in state regulations and in nursing home disaster preparedness plans. Because hurricanes are just one type of disaster and because disasters of a significant magnitude occur in the United States on average slightly more than once per week (FEMA, 2006), nursing homes should move to an all-hazard disaster model. Disaster manuals for nursing homes should be developed that do not predominately focus on one type of disaster to the exclusion of others. However, if nursing home disaster preparedness plans are to be used as practical manuals, the material must be presented in order of priority so it can be readily used by administrators and staff responsible for resident care during disasters.

The format of a plan can enhance or hinder understanding of how to complete a given task during an emergency. For example, using an implementing instruction format can help personnel from one agency with a specific function (e.g. nursing homes) communicate with personnel from another agency (e.g. emergency responders) when each may be unfamiliar with how the other does its job (FEMA, 2006). Additionally, nursing home staff should conduct drills with community disaster responders and use their disaster manuals prior to a real event to become more familiar with their contents and gain practice executing the instructions. Although the OIG is pressing to have CMS require a set of core elements in nursing home emergency plans, a well crafted manual without necessary resources is not sufficient to ensure resident safety and care during a disaster.

Our structured interviews with the Gulf Coast state nursing home associations revealed that states that were adversely impacted by the 2005 hurricanes took steps to improve their written disaster plans. Mississippi, Texas, Georgia, and Alabama referred providers to the Florida Health Care Association's Disaster Preparedness Guide. The Louisiana Health Care Association developed its own state specific guide, using Florida's plan components. Mississippi's 2006 legislature tightened the state's building code, and, as a result, four nursing homes along the coast that had been destroyed in 2005 will be rebuilt inland. Mississippi's nursing home association joined with the state emergency management agency in providing training for all long-term care providers in the spring of 2006, using the Florida plan as a training guide. Given that Texas is on a biennial legislative cycle, the 2007 legislature will address disaster preparedness improvements for the first time since Hurricanes Katrina and Rita impacted the state. In addition, executive orders issued in March 2006 have created regional emergency management systems to streamline and strengthen the state's response. Louisiana also enacted legislation that requires that the Louisiana Department of Health and Human Services review and approve all nursing home disaster plans at the state level. Most state associations feel that

nursing homes under threat of hurricanes are better prepared to respond to a disaster at this point in time.

A potential problem resulting from the OIG recommendation to “...encourage communication and collaboration between State and Local emergency entities and nursing homes” is that CMS would hold the nursing home accountable for resources over which it has no control (DHHS, 2006, p. iii). For example, a nursing home may have a contract with a transportation vendor to provide ambulance or paratransit bus services. During standard day-to-day operations, the transportation vendor is able to fulfill its contractual obligations with multiple nursing homes located in the same area. As discussed earlier, during the 2004 and 2005 hurricane evacuations, transportation vendors were unable to honor existing contracts because they did not have enough vehicles to meet the demands of multiple facilities needing transportation services for their residents. Further, it is likely that the resources necessary to carry out this task during a major disaster do not exist. Although formal coordination of transportation services with government transportation agencies, transportation providers, and nursing home associations has yet to occur, these entities are increasingly recognizing the need to work cooperatively. Until a mechanism is in place to facilitate coordination of transportation services between vendors and facilities, this will remain a critical issue affecting resident safety during disasters.

While it is advantageous for facilities to establish working relationships with local and state emergency responders, the federal response is limited to the enforcement authority of CMS over nursing home care practices (CMS, 2006). Although current CMS regulations require disaster preparedness and emergency planning within nursing homes, true preparedness requires more than regulation of nursing homes. It calls for a willingness of the community to recognize and accept responsibility for the vulnerable populations residing in long-term care facilities. The isolation of nursing homes outside of the emergency operation systems in some states is one indication of the marginal status of nursing homes and may have significantly contributed to the deaths of the 70 nursing home residents during the 2005 hurricanes (Hyer *et al.*, 2006).

States are the entities that will ensure that local and regional emergency operations systems recognize nursing home providers as critical health care providers. Nursing homes are as important as hospitals in the continuum of care, yet their residents are not usually included in the community-wide disaster preparedness exercises, or in transportation planning for evacuation. Local capacity to review and assess nursing home emergency plans varies dramatically. Furthermore, the emergency management system review of nursing home plans is housed outside of the state departments charged with nursing home regulatory functions, requiring more state and local coordination. Finally, the Stafford Act influences the federal and state decisions on providing such assistance as transportation to health care facilities, with priority given to hospitals, governmental entities, and non-profit private health care providers. Nursing homes also suffer during recovery from disasters, including access to emergency relief efforts.

In 2004, 1.5 million residents were living in 16,500 facilities at a cost of \$62.5 billion in Medicaid and Medicare funds (Harrington *et al.*, 2006). Although approximately 80% of nursing home revenue is paid for by Medicaid (65%) or Medicare (15%), clearly indicating the federal role in nursing home finances, 70% of

the nursing homes are for-profit entities. Yet, under the Stafford Act, for-profit entities are neither eligible to apply for federally funded disaster relief funds emergency assistance nor eligible for hazard mitigation dollars to prevent damage (Bea, 2005). Further, most communities consider nursing homes a business, not a health care facility. A constant tension exists between regulating detailed specifics of the business of caring for residents, the appropriateness of business accountability for poor outcomes, and the willingness of state and local governments to pay for the cost of necessary services.

Notably, during and after the 2004 and 2005 hurricane seasons, federal requirements, state laws, and the OIG investigation focused on mitigation, preparedness, and immediate response to hurricanes rather than on recovery issues. Appropriately, state laws and nursing home disaster plans emphasize resident safety and adequate care; however, the mental well-being of residents during and after a disaster is frequently overlooked. None of the reviewed state laws address disaster-related mental health issues. Likewise, current nursing home facility and association disaster plans do not mention the need for resident disaster mental health assessment and intervention. Although the OIG report does not list disaster mental health care among its 25 provisions, it notes that nursing home facilities reported that "evacuation was psychologically difficult" and that some residents exhibited symptoms of depression (DHHS, 2006, pp. 8, 15).

Institutionalized older adults are not provided with the same access to disaster mental health care as are community-dwelling older adults, who, like other members of the general public, are offered psychological first aid, assessment and a referral for follow-up care if needed by volunteer paraprofessionals working at public shelters and disaster service centers. Nursing home residents do not use public shelters or disaster service centers, and paraprofessionals providing disaster mental health services typically do not go to nursing home facilities. Further, many nursing home residents are cognitively impaired and need modified disaster mental health treatments (Brown, Cohen, & Kohlmaier, 2007). Medicaid and Medicare funding for these services is severely limited, if available at all.

It is not surprising that the highest-ranked OIG provisions across the three categories—*General*, *Sheltering in Place*, and *Evacuation*—focus on having a safe and sound structure in which to dwell during a hurricane. The lowest-ranked provisions involve the sheltering of staff family, hosting procedures for receiving facilities, and amount of water transported with residents during an evacuation. The first two items may have been ranked lower because shelter can usually be obtained for staff family, even if not at the nursing home, and a host facility can typically accommodate evacuating residents' needs. When evacuating facilities, water is normally transported, but the need for specifying an amount was not ranked as highly important. Water, food, and medication are included as six provisions under two categories—*Sheltering in Place* and *Evacuation*. Operationally, facilities must have enough water, food, and supplies to care for residents and families, regardless of whether they evacuate or shelter in place. Nursing homes do not distinguish evacuation from sheltering in place when storing supplies for disasters.

We believe that Florida provides a model of successful collaboration among nursing homes and the EOC. Florida, which experienced eight hurricanes during 2004–2005, has a strong state EOC that recognizes nursing homes as health care providers. Florida's nursing homes and assisted living associations have a seat at the

state EOC and are represented at the local EOC during the disaster recovery phase. Furthermore, Florida safely evacuated over 10,000 nursing home residents during the 2004 and 2005 hurricane seasons (Hyer *et al.*, 2005), and the American Health Care Association promotes the Florida Health Care Association's *Disaster Preparedness Guide* as a model plan to other states. Because major hurricanes impact multiple states and because the threat of hurricane activity is not expected to diminish during the next two decades (National Oceanic and Atmospheric Administration, 2006), a regional network of stakeholders and their community partners need to be engaged in supporting legislative and policy changes in nursing home hurricane disaster preparedness. State laws and regulations are critical to state planning, management of disasters and reimbursement for care. States also play a central law in all phases of disasters that the OIG report seems to ignore. States and federal regulations must work together to facilitate interaction between various responder agencies to improve nursing home resident care and safety and prevent and lessen loss of human life in future disasters.

ACKNOWLEDGEMENT

We wish to thank Patrick W. Rhodes for his research contribution to this project.

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