



# NURSING INSIGHT

Review of disaster healthcare literature for nurses

Published by the Nursing Section of the World Association for Disaster and Emergency Medicine

Volume 2, Number 3

November-December 2007

## Disaster Planning and Risk Communication with Vulnerable Communities: Lessons from Hurricane Katrina

*Eisenman DP, Cordasco KM, Asch S, Golden JF, Glik D  
American Journal of Public Health 2007;97:s109-s115*

Reviewed by Marguerite Littleton-Kearney

**PURPOSE:** To better understand the factors that affected evacuation decisions and behaviors of the vulnerable, adult population of New Orleans during Hurricane Katrina.

**METHODS:** Qualitative methodology was used in the form of semi-structured interviews of adults (>18 years) residing in Houston's three major evacuation centers: The Reliant Center, the Reliant Astrodome and the George Brown Convention Center. Participants within shelters were selected using a random-numbers table and assigned row and cot numbers. Sampling of persons in line outside of the shelters also was random based on their numbered position in a line. A content analysis was performed to identify answer consistencies and patterns. A grounded-theory approach was used to determine the themes and sub-themes that emerged from the data.

**RESULTS:** Fifty-eight of 75 individuals approached agreed to participate in the study; the majority were African-American. The average income of 50% of the participants was <\$US 20,000/yr; 40% were employed full-time; 40% were disabled, retired, or not working. The identified themes fell into three broad categories: (1) resources and practical concerns needed for/related to evacuation; (2) receipt, processing, and understanding of evacuation messages; and (3) attitudes and perceptions of the disaster's nature or the underlying politics. Under these themes, sub-themes such as shelter, transportation money, health, social networks, comprehension of messages, risk perception, and perception of discrimination emerged. The importance of the extended family's health, especially the elderly or infirm, as it affected the ability to evacuate was commonly voiced. The authors conclude that many obstacles to evacuation exist for low income groups and that community disaster preparedness plans must incorporate consideration of these obstacles for their vulnerable populations. Consideration of shelter and transportation are insufficient and the

importance of social networks and extended families must be addressed in disaster evacuation plans.

**COMMENT:** This qualitative study illustrates the complexities of planning for the evacuation of vulnerable populations and provides some insights into the reasons that some individuals did not follow orders to evacuate New Orleans during Hurricane Katrina. However, the small sample size (only 75 of the approximately 27,000 sheltered individuals were approached to participate in this study!!!) makes generalizations difficult. Also, as noted by the authors, the sample may have been skewed toward older, poorer, and less educated evacuees, since many of the shelter residents lacked the resources to have found housing elsewhere. The authors also indicate they were unable to determine if the sample was an even representative of the general shelter population due to the transient nature of the people in the shelters and a lack of complete demographic data.

Despite the limitations of this study, the findings point out several reasons that may cause people to ignore a city's evacuation orders, particularly individuals who are members of vulnerable populations. As noted by the authors, urban disaster planners must consider creating educational programs that expose and demystify misconceptions about the stability of structures and the safety of evacuation during hurricanes. Further, the findings of this study suggest that as social networks can influence individual decisions to stay or evacuate, they must be incorporated in all community disaster planning and communications. This is a preliminary study that suggests disaster warnings must be clear, concise and relevant to the people residing in every part of the city. Being ordered to evacuate without resources and/or without specific destinations is insufficient for compliance. These issues warrant further study with a larger, more diverse sample.

## A Mass-Casualty Incident Involving Children and Chemical Decontamination

*Timm N, Reeves S*

*Disaster Management and Response 2007;5(2):49-55*

Reviewed by Dianne Whyne

**PURPOSE:** To describe a children's hospital's response to an event resulting in 56 patients needing decontamination.

**METHODS:** This is a non-research based, case history article describing one hospital's response to the chemical exposure of 53 fifth-grade students and 3 teachers to N-butyl mercaptan.

**SUMMARY:** On 17 November 2005, the Cincinnati Children's Hospitals Medical Center's (CCHMC) Emergency Department (ED) received notification that 56 contaminated victims would be arriving at their facility following an exposure to N-butyl mercaptan inadvertently released on a school bus. N-butyl mercaptan has a skunk-like odor and is used as an odorant for natural gas and as a solvent in pesticide production. This irritant exposure caused varying degrees of shortness of breath, vomiting, coughing, and choking in many of the exposed children. Following notification of the event, the hospital activated its emergency management plan for a mass-casualty incident. As a result of this real-time activation of the decontamination procedures of the hospital, several important lessons were learned. The authors noted that the hospital's overhead announcement of the incident resulted in excessive staff responding to the ED and many telephone inquiries, both of which led to confusion in the ED. Another problem identified was that the Incident Command Team reported to the ED instead of to the Emergency Operations Center as designated in the emergency plan; this caused crowding in the ED and role responsibility confusion. Although the hospital had a pre-designated location for the labor pool, the site was unavailable at the time, and an alternate area had to be identified quickly leading to the realization that these areas must have designated alternative sites. Planning for ED surge had not been done and could have been a problem if the ED had been exceptionally crowded at that time. A subsequent and important change made to the hospital's disaster plan is the addition of decontamination team members who work outside of the ED in order to avoid depleting personnel resources in the ED. Additional recommendations by the authors include the need for hospitals to include children in their disaster exercises, redundant communication systems, a consideration of the special needs of children during and following decontamination, and the need for all hospitals to have the ability to decontaminate both children and adults. The authors also suggest that frequent testing of communication equipment is essential to adequate preparedness and that children's hospitals be prepared to treat adult victims of a hazardous event.

**COMMENT:** Although the findings in this case report are not new, the event is well-analyzed and summarized. What went well in this real-life exercise was evidence of effective staff preparedness and response in the decontamination and treatment of both children and adult victims. External and internal communications worked effectively in this situation in which phone lines remained operable. The report highlights several key aspects of response when children are involved in an incident. Physiologically and psychologically, children are more vulnerable than adults in any mass-casualty event and certainly are more vulnerable than adults to chemical agents that are absorbed through the skin or inhaled. With respect to planning for and responding to events, children have unique needs that require specific

equipment and interventions that must be considered by disaster response planners. Also, children require different dosages of antibiotics and antidotes to many agents, and have unique needs during decontamination.

One key point from this article is the need for the training of a decontamination team that is separate from the ED staff so as not to deplete essential ED resources. In addition to the identification of several problems with the hospital's incident response that are commonly noted during mass incidents, the authors noted that due to the increased risk of hypothermia in children, decontamination must be performed with warm water in a warm or heated environment. They also emphasize the value of including child life specialists in the process. This valuable case report highlights the scarcity of well-supported research focused on the special needs of children during chemical incidents.

### First-Receiver Hospital Decontamination—An 8-Step Approach to a Progressive and Practical Program

*Edwards D, Williams LH, Beatty J, Hayes MJ, Conner BB, Hodgson MJ, Scott MA*  
*Journal of Nursing Administration 2007;37(3):122–130*

Reviewed by Dianne Whyne

**PURPOSE:** To describe an 8-step program used to develop a hospital-based emergency preparedness program and decontamination team capabilities.

**METHODS:** This is non-research based article describing the development of a first-receiver hospital decontamination program using a volunteer team model at the Central Arkansas Veterans Healthcare System (CAVHS) in Little Rock, Arkansas US.

**SUMMARY:** The authors of this article describe and advocate an eight-step program as a framework to develop a hospital emergency preparedness training program and a specialized team with safe and effective decontamination capabilities. Step 1 requires a hazards and vulnerability assessment including the determination of both internal and external threats and prioritization of identified risks. The second step is a needs assessment of the hospital's financial resources, determination of levels of education and training needs, and consideration for the handling of the public. Step 3 is assessment of available staffing/personnel resources and the availability of equipment and supplies. In Step 4, planners create a timeline for selecting team members and providing education/training. Team development can be based on one of two proposed models: a volunteer-driven model, or a collateral, job-duty assignment model. Step 5 logically addresses program and education development. The authors suggest that the education/training program should include three levels: (1) training of a small core (5–10 members) to be expert team leaders; (2) training of a moderate-size group (10–30 members) to act as operational decontamination team members; and (3) training of a large group (>30 members) to serve as support staff. Step 6 involves program implementation including descriptions of vital staff team members, identification of team leaders, and competency assessment protocols with drills and exercises.

The last two steps of the plan involve an on-going program assessment and a long-term review using a continuous program improvement model. The authors propose that use of the 8-step approach can enhance community response capabilities and inter-institutional team building.

**COMMENT:** This article describes a detailed plan for the development of a volunteer, hospital-based decontamination team. It unites information about the Continual Improvement Process for Emergency Management Planning (plan, do, act, and check) with the development of a Hospital Volunteer Decontamination Team. Although the key points on the continual improvement process are not new, the article does provide a good overview for emergency planners not experienced in this process.

The authors raise important points about purchasing interoperable equipment that is easy to assemble, and is space efficient. Additionally, decontamination drills must be designed to match the developmental level of the team and should enhance learning. Another point worth consideration is the composition of any hospital-based decontamination team. Often, it is expected that Emergency Department (ED) personnel be trained to perform decontamination; however, a diverse decontamination team of non-ED staff members frees the ED staff to focus on what they do best—providing essential patient care and definitive medical treatment to the victims.

This article provides substantial detail regarding a process to develop a specialized decontamination team and education program and, thus, will be of value to nurses involved in hospital disaster preparedness plans and decontamination education/training. However, although it outlines the topics to be included in each level of training, it does not include any discussion of the contamination procedures of special needs populations (children, elderly, handicapped, etc.). Unless this is an omission oversight, it represents a major gap in their preparedness levels.

While patient decontamination is a subject well covered in the literature, more articles are needed on “Best Practices” for team development, training and team composition. It is important to stress that the hospital decontamination process must be designed with worker safety as a primary goal. The decontamination process itself may be hazardous to employees and sound education and training drills must be conducted with that goal in mind.

### Health Needs of Patients with Chronic Diseases who Lived through the Great Hanshin Earthquake

Mori K, Kazuhiro U, Nonami Y, Kirimura T, Kondo C, Nakamura T, Motoki E, Kaji H  
*Disaster Management and Response* 2007;5(7):8–13

Reviewed by Marguerite Littleton-Kearney

**PURPOSE:** To identify the health needs of patients with rheumatism, diabetes, and chronic respiratory disease who survived the Hanshin earthquake in 1995.

**METHODS:** This was a descriptive study of 29 patients with chronic diseases that included rheumatism, diabetes

and respiratory disease who lived in the Osaka-Kobe area and experienced the Hanshin earthquake. The investigators used semi-structured interviews to determine health maintenance problems in the post-earthquake period.

**RESULTS:** Of the 7 men and 22 women interviewed, 10 (1 man) had rheumatism, 8 (2 men) had diabetes and 11 (4 men) had chronic respiratory disease. All subjects expressed a concern over the availability of necessary medications after the earthquake. Those with rheumatism had health needs regarding their limited mobility, need for pain management, and protection from cold-induced joint pain and swelling.

**COMMENT:** This study emphasizes the importance of planning for individuals with chronic diseases in the event of a disaster. It also shows the necessity of finding ways to increase healthcare providers' understanding of the needs of those who have disabling diseases or chronic illness. The majority of the people in the sample expressed a need to have enough medication to get them through the early post-event days. One theme consistent among the three conditions was the perception that the increased stress associated with the earthquake and the events following it contributed to the exacerbation of their disease symptoms.

However, there are numerous limitations and weaknesses of this study. One major weakness is that the investigators asked subjects to recall their responses to an event that occurred 9 years prior to the interviews. Memory of the event and the major problems associated with the earthquake could have become attenuated or even exaggerated and, therefore, not reliable. Another major weakness is the exceedingly small sample size of 29 individuals. Also, the authors provide no indication of how these 29 individuals were either identified or selected, thus raising sampling bias concerns. Additionally, the authors do not explain how, or by whom, the collected data were analyzed and categorized. Thus, while the information obtained is of interest, it contributes little to the body of evidence we seek on which to base our practice and/or practice changes.

This study does point to areas that need to be scientifically investigated. It would be very interesting to determine if survivors of more recent catastrophes such as the Asian tsunami or Hurricane Katrina experienced similar responses. It also would be useful to obtain a much larger sample size and attempt to determine if differences exist between the responses of the healthy elderly and those of the elderly with a chronic illness.

### The Bali Bombings and the Evolving Mental Health Response to Disaster in Australia: Lessons from Darwin

Guscott WM, Guscott AJ, Malingambi G, Parker R  
*Journal of Psychiatric and Mental Health Nursing* 2007;14:239–242

Reviewed by Andrea Oswald

**PURPOSE:** To discuss the improvements in the disaster response of mental health services to patients and hospital staff through planned service development in Australia after the Bali Bombings.

**METHODS:** This is a non-research based review article that describes the development of mental health resources at Royal Darwin Hospital, Australia following the Bali bombings in 2002 and 2005.

**SUMMARY:** As the nearest major Australian hospital, the Royal Darwin Hospital had an active role in caring for the victims of the Bali bombings in 2002 and 2005. Injured victims of the first blast were evacuated to the Royal Darwin Hospital (RDH) for stabilization of their injuries (mainly burns) prior to evacuation to southern locations. During the first incident, the mental health response to the event consisted of an offer of professional assistance by a senior psychiatrist and the director of mental health nursing. However, the staff did not request any mental health consultations during the time the injured were patients at the RDH. A general debriefing session for the staff was conducted by a senior psychiatrist after the incident; this mainly addressed common behavioral responses to such an incident.

During the time from the first bombing until the second bombing in 2005, the hospital's mental health services were expanded to include a full-time mental health nurse assigned to the Emergency Department (ED) to perform mental health assessments and to be available in a support capacity in the ED. Additionally, the hospital assigned a consultation liaison psychiatry Registrar (Resident) and three part-time Psychiatric Consultants to supervise the Registrar and the nurse and serve as Mental Health Service Directors for hospitalized patients.

Immediately following the second bombing incident in Bali, the Mental Health Services Department at the RDH was became involved in hospital planning and preparation sessions. Existing mental health services were enhanced to ensure a strong and easily recognized mental health specialist presence in the ED. The mental health status of all victims was assessed by nurses before they were transferred to hospitals closer to home. Risk assessment included a brief review of the experiences of the victims, an evaluation of their current mental status, and their previous exposure to any trauma. Common themes identified among the blast victims included disbelief and anger, depersonalization, and anxiety. Most patients expressed a sense of violation, loss of safety, and invasion of personal space. The mental health nurses also were frequently approached by the hospital staff for informal, "corridor consults". Follow-

up visits were offered to those staff members who expressed some mental distress and need for more support. Following the incident, staff information sessions were provided and focused on resources to aid in coping with the emotional consequences of dealing with victims of the blast.

**COMMENT:** The importance of behavioral and mental health support during disaster response is illustrated in this article reviewing changes in the mental health services at Royal Darwin Hospital following the first bombing incident in Bali, for which the hospital was unprepared. An important step to enhance the mental health consultation capacity was the institution of a full-time Mental Health Nurse in the ED. The presence of a Mental Health Nurse allowed an assessment of the mental status of all blast victims that were admitted through the ED after the second blast incident—a service that was not available during the first blast incident.

As the number of terrorist incidents increases worldwide, it is becoming evident that almost all victims and many staff members incur emotional/behavioral/mental health disturbances. Often, these disturbances affect the victims' physical response to injury as well as emotional distress; it also can cause mental discomfort to the healthcare workers caring for the victims. The need for staff support was evidenced by the fact that some of the nurses caring for victims of the second bombing described residual anxieties rising from memories three years after the first bombing. There are no data provided on the number of mental health consultations after the two terrorist attacks or the number of staff consultations and follow-up; this would have been interesting data to have included.

This article is of value because it demonstrates that the presence of a mental health nurse in the hospital ED can play an important role in the care of disaster victims, trauma patients, and staff. It also emphasizes that ongoing disaster mental health education can positively affect the efficiency of hospital preparedness and response.

The authors emphasize that the greatest lesson learned was the importance of in-service education of staff to enhance communication and mental health skills. Although lacking quantitative data, this article provides valuable anecdotal information regarding the importance of mental health services in disaster response.

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