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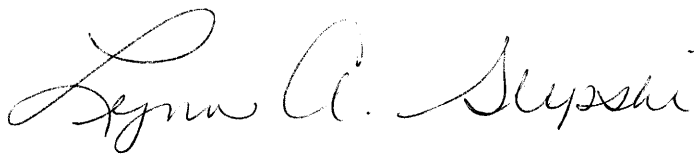

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A Dissertation Portfolio

Emergency Preparedness and Professional Competency Among Health Care Providers During Hurricanes Katrina and Rita

CAPT Lynn A. Slepski, RN, MSN, PhD-C, CCNS

Submitted to Dissertation Chair, Dr. Dorraine D. Watts, PhD, RN

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Uniformed Services University of the Health Sciences

Graduate School of Nursing

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Chapter 1—Linking Paper/Executive Summary

Chapter 2—Manuscript of Excellence

Slepski, L.A. (2005). Radiation incidents and emergency preparedness. *Nursing Spectrum Continuing Education*. New York:Nursing Spectrum. Available at http://www2.nursingspectrum.com/CE/Self-Study_modules/course.html?ID=548.

Chapter 3—Research Protocol

Chapter 4—Proposal Defense

Proposal Defense PowerPoint
Form C: Request for Appointment of Dissertation Chairperson
Form D: Request for Appointment of Dissertation Advisory Committee
Form E: Report of Proposal Defense Examination for the Doctor of Philosophy Degree

Chapter 5—State of the Science

Slepski, L.A**.** (2007). Emergency Preparedness and Professional Competency among Health Care Providers during Hurricanes Katrina and Rita: Pilot Study Results. *Disaster Management and Response*. *5*(4), 99-110.

Chapter 6—Theory

Slepski, L.A. (2005). Emergency preparedness: Concept development for nursing practice. *Nursing Clinics of North America, 40*(3), 419-430.

Chapter 7—Data Analysis

Slepski, L.A., Watts, D.D., & Weiner, E. (Submitted). Exploring the Emergency Preparedness of Disaster Healthcare Responders Using the Meleis' Transitions Framework. *Advances in Nursing Science.*

Chapter 8—Data Analysis

Slepski, L.A., Watts, D.D., & Weiner, E. (Submitted). Exploring the Emergency Preparedness Competencies of Disaster Healthcare Responders During Hurricanes Katrina and Rita. *Prehospital and Disaster Medicine.*

Chapter 9—Dissertation Abstracts

Chapter 10—Dissertation Defense

Form F_A: Request for Dissertation Defense Date
Dissertation Defense PowerPoint
Form H_A: Report of Dissertation Defense for the Doctor of Philosophy Degree
Form I: Certification of Dissertation
Form J: PhD Degree Certification

Appendices

Appendix A—Letters of Acknowledgement
Appendix B—Abstract Submission with Results
Appendix C—Additional Publications related to Dissertation Topic
Appendix D—Other Papers Published While in Doctoral Studies
Appendix E—Bibliography

LINKING PAPER/EXECUTIVE SUMMARY

Emergency Preparedness and Professional Competency Among Health Care Providers During Hurricanes Katrina and Rita

Captain Lynn A. Slepski, MSN, RN, CCNS, USPHS

Conceptual Basis

Despite consensus that preparation is the key to effective emergency response, there is little information in the literature about what competencies are required or how to best prepare to be a disaster healthcare provider. Training programs, such as the one authored for this dissertation's first manuscript (Slepski, 2005a) offer training in specific aspects of emergency preparedness, but there is no comprehensive curriculum for responders. National response plans and annexes call for the establishment of alternative, non-hospital, field medical facilities, staffed by volunteers, to treat thousands of victims of large-scale events. Federal planners assume that trained and competent healthcare workers will volunteer to staff these facilities, yet no studies have addressed whether volunteers are prepared and competent to function in these roles.

A key, but poorly defined concept in disaster management and planning is "emergency preparedness." This concept was explored in the theory manuscript for this dissertation (Slepski 2005b). This concept analysis defines emergency preparedness as "the comprehensive knowledge, skills, abilities and actions needed to prepare for, and respond to, threatened, actual or suspected chemical, biological, radiological, nuclear or explosive incidents, man-made incidents, natural disasters or other related events" (p. 426).

Literature Review

A 2002 Agency for Healthcare Research and Quality (AHRQ) evidence report examined the most effective methods of training clinicians for detection and management of a bioterrorism attack or other public health events. The report found that: there are no published validated measures of preparedness; few data that demonstrate the effectiveness of particular training interventions; no studies evaluating educational programs for bioterrorism or other public health events in particular; and no studies addressing how to update and reinforce the training of clinicians in how to respond to mass casualty incidents.

Most of the work in the areas of emergency preparedness and disaster response is not reported in the literature and is known only through anecdotal information and preliminary reports at conferences. Further, no systematic examination of the preparedness of health care providers and their response capabilities during a large scale response has been conducted and reported. Evidence of scientific quality regarding emergency preparedness response and professional competency is still lacking. Despite billions of dollars being expended annually, there is a paucity of research that demonstrates that healthcare responders are adequately prepared, that existing emergency preparedness training addresses appropriate professional competency requirements or that training is even effective.

Yet, even with the absence of scientific evidence or Federal criteria, several groups have independently attempted to develop core competencies for a variety of responders. Because the area of emergency preparedness is new to investigation, there are no known or established tools. None of the existing sets of core competencies have been tested for validity to date. As a result, very little is known about what knowledge, skills and abilities are needed in a disaster.

Hurricanes Katrina and Rita triggered the largest natural disaster relief and recovery operations in United States history and created an unprecedented demand for disaster healthcare services. The hurricanes also created an opportunity to examine the phenomenon of disaster response. A pilot study was undertaken to begin to define the competencies used in a disaster situation. This study results were presented in the next manuscript of this dissertation (Slepski, 2007). The pilot study of 200 healthcare professionals who deployed to Hurricanes Katrina and Rita found that few respondents reported knowledge deficits. Rather, what they described was an abrupt change or transition from their everyday practice worlds that required accommodation in order to practice effectively at a disaster incident.

Methods

The results of this pilot study were used to construct the final instrument for the dissertation research. The purpose of the dissertation study was to identify and analyze critical issues related to emergency preparedness for individual providers by: exploring and describing the characteristics of healthcare responders; exploring provider experiences using Meleis' Transition Framework; and, assessing specific competencies that were employed during those disasters.

In 2007, Physicians (MDs) and Registered Nurses (RNs) who responded to Hurricanes Katrina and/or Rita were invited to complete an Institutional Review Board approved, anonymous, 544-item web-based questionnaire on their experiences. Included in the study were demographics, transition perceptions pre-, during and post event and two specific competency areas: basic clinical care and triage—required during their response.

Respondents were asked to indicate whether a transition event occurred (yes/no), and then rate the importance of the event using a 5-point Likert-type scale ranging from not important (1) to very important (5). Similarly, respondents who indicated that they had performed either basic clinical care or triage were presented with a list of skills. For each skill, respondents were asked three questions: whether they performed the specific skill at the disaster site (yes/no); to rate the amount of previous training in the skill using a 3-point Likert-type scale of (1) none, (2) some and (3) extensive; and, to rate their confidence in performing the skill using a 5-point Likert-type scale ranging from not confident (1) to very confident (5). Finally, respondents were asked to rate the outcome of the overall response experience, as to whether the deployment had been a positive experience and whether the response had been a satisfying experience on the five point Likert-type scale.

Data Analysis

Descriptive statistics were calculated for categorical variables describing the characteristics of respondents. Frequencies, means and standard deviations were calculated from responses on the 3- and 5-point rating scales. Nominal categories were compared using Pearson's Chi-square. Spearman's Rank Order Correlation was used to calculate correlations between demographic and transition factors and the transition outcomes of a positive response experience and satisfying response experience. All statistical tests were conducted using Statistical Package for the Social Sciences (SPSS) software (version 14.0, SPSS, Inc., Chicago, IL). All data were statistically analyzed at an alpha of .05 with 95% confidence interval.

Results

Respondents (n=196) were predominantly nurses (69%); female (59%); >40 years of age (81%) with >20 years of practice (58%), previous response experience (64%) and formal training in disaster preparedness (73%). Despite preparation, most reported difficulty in transitioning from their usual provider role to the role of a disaster responder. Neither membership in a disaster organization, prior training, nor disaster response experience contributed significantly to positive transition outcomes. A positive and/or satisfying response experience was most strongly influenced by the provision of information before the event, at the disaster site and before leaving. This was reported in the first data analysis manuscript (Slepski, Submitted A).

The second data analysis manuscript (Slepski, Submitted B) reported results related to competency. Most respondents reported that they performed basic clinical skills (n=132, 67%) with 44% reporting performing triage (n=86). There was no statistical difference ($p>.05$) between MD's and RN's on whether they performed basic care (67% vs. 68%,) or triage (37% vs. 47%) nor on previous training in basic care (100% vs. 100%) or triage (96% vs. 98%) nor in their confidence performing basic care (4.6 vs. 4.6) or triage (4.6 vs. 4.4). What responders had difficulty with was the abrupt change from everyday practice required in order to perform effectively at a disaster site.

Conclusions

In this study, responders were well trained and confident in performing basic clinical care and triage competencies. Rather than a training or confidence issue, what they had difficulty with was the abrupt change from everyday practice required in order to perform effectively at a disaster site. Responders often made the transition to the disaster role without adequate support or information and as a result, issues seemed to arise from functioning within the unique challenges of a disaster environment. Current disaster training focuses on teaching skills, rather than how to function in a disaster setting. Results from this study indicate that transition outcomes identified by Meleis can be positively influenced in a disaster response through patterns of response—methods to make the transition easier. Further study is needed on how to more effectively prepare individuals for a disaster response.

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Slepski, L.A. (Submitted A). Exploring the Emergency Preparedness of Disaster Healthcare Responders Using the Meleis' Transitions Framework. *Advances in Nursing Science.*

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CE363

Radiation Incidents and Emergency Preparedness

Cmdr. Lynn Slepski, RN, MSN, CCNS

ce CONTINUING EDUCATION

The goal of this program is to provide information to nurses about radiological contamination and medical care following an incident involving radiation sources. After studying the information presented here, you will be able to —

- Explain the basic principles of radiation and possible scenarios for radiological incidents.
- Discuss the injuries, radiological contamination routes, presenting signs and symptoms, and treatments associated with radiological incidents.
- Discuss the basic roles and responsibilities of nurses in responding to a radiological mass casualty (MASCAL) incident.
- Name additional resources that nurses can call on to learn more.

We know that terrorists will use any means to gain attention, cause harm, and disrupt the lives of the American people. Radiation emergencies are one of the least understood and emphasized segments of health provider education and therefore one of the most frightening.[1] You can't see, smell, or touch radiation.[2] Most health workers feel unprepared to deal with radiological incidents. We know that a mass casualty (MASCAL) incident resulting from radiation is likely to generate large numbers of frightened people, or "worried well," who may or may not require decontamination.[3,4]

Radiation 101

Radiation is energy that can be characterized as waves or particles trying to become stable. Radioactive materials contain energized atoms that are unstable and release energy. This energy may damage certain critical cellular structures, causing a cell to malfunction or die and may also interact with water molecules in the body to create unstable, hyperoxide molecules, causing further damage. (See the table on the next page for characteristics of ionizing radiation.)

Every year, people worldwide are exposed to naturally occurring background radiation from the sun, outer space, and radioactive materials in the soil. The average U.S. resident receives a background radiation dose from all sources of about 100 millirems.[5] Man-made sources of radiation include some industrial measurement devices and radiotherapeutics used for medical diagnoses and treatment. Sources of radioactive materials include nuclear power plants, nuclear waste processors, university research centers, medical radiotherapy clinics, and even industrial complexes.[1]

The Gray (Gy) is a unit of measure for absorbed dose and reflects the amount of energy deposited into a mass of tissue (1 Gy = 100 rads). The U.S. annual occupational exposure allowed by the Department of Energy for those who work with and around radioactive materials is 0.05 Gy [1] (or 15,000 millirems).[6]

Weapons of mass destruction

There are four general scenarios you consider when classifying radiological weapons of mass destruction (WMD).[7] The four scenarios are examined here in order of least likely to occur to more likely to occur.

Nuclear bombs or improvised nuclear devices (IND), also known as suitcase nukes, require high-grade radioactive fissionable materials and the scientific and technical sophistication to assemble the components for detonation. Nuclear devices create a tremendous blast, extreme heat, and a significant dose of radiation to those in close proximity (two miles for an IND and more than 50 miles for a 1 kiloton nuclear bomb).[1,8] The purchase and transportation of fissionable materials are highly regulated in most countries, which significantly limits their availability. This type of event is extremely unlikely.

In the history of the nuclear power industry, industrial accidents involving nuclear power plants have been rare. Nuclear plants have a number of redundant safety systems to take a plant off-line as well as well-exercised emergency plans involving local authorities (police, fire, and EMS). Their physical structures have been bolstered to prevent accidental releases, even from a terrorist attack.

There have been a few reports of hidden or "silent" sources, defined as radioactive sources that are lost or abandoned, or intentionally placed in areas to expose people. By placing a source on mass transportation, such as under a subway seat, or in a large movie theater, large numbers of casualties could occur over time.

Finally, radiological dispersion devices, or dirty bombs, combine an ordinary explosive with a radioactive material. Although there has been no documented use to date, it is believed that a dirty bomb could be constructed with radiologic materials found in common use. Materials like Cesium 137 and Cobalt 60, frequently found in medical teletherapy, and Iridium 192, found in industrial instrumentation, can be purchased legitimately or illegitimately, or stolen.[1,7]

While it is unlikely that a dirty bomb would cause large numbers of actual radiation casualties, detonation of one would likely result in panic and economic disruption.[2]

How radiation affects the body

Exposure occurs when all or part of the body is exposed to penetrating radiation. We subject patients to exposures every day when we perform a CT scan or an X-ray. The radiation is either absorbed or passes completely through. Once removed from the source, the patient is not radioactive and can be treated like any other patient.[3,7,8]

Contamination is radioactive material where it does not belong. It can be a solid, liquid, or gas or even dust particles that float through the air and eventually settle on the ground or some other surface. External contamination is radioactive material on the outside of the body, usually on the skin or on clothing. It can be easily removed by removing clothing and washing the skin with soap and water. Internal contamination involves the deposition of radioactive material inside the body through inhalation, ingestion, or penetrating wounds.[3,7]

Incorporation is the uptake of radioactive materials by body cells, tissues, and target organs such as bone, the liver, the thyroid, or the kidney, causing chemical changes at the cellular level. Incorporation cannot take place unless contamination occurs.[3] Cells that replicate rapidly, such as spermatocytes, blood elements, and intestinal crypt cells, are very sensitive. Lymph tissue and bone marrow are the most radiation-sensitive tissues. The most radiation sensitive organs are the skin, intestines, kidneys, and gonads.[6,9]

Radiation can affect the body in a number of ways, and harmful health consequences may not be seen for many years.[7] Effects depend on the amount of radiation absorbed by the body (the dose), the type of radiation, the route of exposures, and the length of time a person is exposed. Effects can be mild, such as reddening of the skin, or serious, such as cancer and even death.[10] Special populations that are more radiation-sensitive include those under 12 years and pregnant women because of their rapidly growing tissues, those over the age of 60 because of declining immune systems and co-morbidities, and those with pre-existing conditions that may result in immunosuppression, blood loss, or infectious complications. The human embryo and fetus are particularly sensitive to ionizing radiation, and the health consequences of exposure can be severe, even at radiation doses too low to immediately affect the mother. Consequences can include growth retardation, malformations, impaired brain function, and cancer. At higher doses, the health effects depend on dose and the stage of gestation.[8,11]

Characteristics of Ionizing Radiation[1,2,5]

Type	Characteristics	Shielding	Risk
Alpha particles	Very large, positively charged, highly ionizing. Travel several centimeters in air. Will not penetrate the dead layer of skin.	Thin layer of paper or clothing. Superficial layers of skin.	Negligible external hazard. Internal contamination causes tissue damage.
Beta particles	Very light. Travel anywhere from inches to many feet through air. Moderately penetrating in other materials. Can penetrate human skin to the layer where new skin cells are produced.	Sheet of aluminum foil.	If allowed to remain on the skin for a long time, may cause skin injury. Beta-emitting contaminants may be harmful if deposited internally.
Gamma rays and photons contained in X-rays	Uncharged electromagnetic radiation. Highly energetic. Travel many feet in air and many inches in human tissue, readily penetrating most materials.	Thick layers of dense material, such as lead, tungsten, steel, and concrete.	Protective clothing provides little shielding, but will prevent contamination of the skin with gamma-emitting radioactive material.
Neutrons	Emitted at the time of a nuclear detonation. Neutrons travel many feet in concrete and thousands of feet in air, penetrating most materials.	Thick layers of shielding material, such as concrete.	Significant. Time, distance, and shielding directly affect survivability.

Nursing considerations

The Joint Commission on Accreditation of Healthcare Organizations requires facilities it accredits to have and exercise emergency plans for radiologic incidents that use the Incident Command Systems.[4] Plans should involve hospital radiation experts, such as the radiation safety officer, health physicists, and medical physicists. These experts can help hospital staff document the presence of radioactive materials, activity levels, and accident details; collect samples that document contamination; assist in decontamination procedures; conduct and document dose calculations; and dispose of radioactive wastes.

Other federal guidelines exist. For example, the Occupational Safety and Health Administration recently published mass casualty guidelines addressing protection for first receivers during releases of chemicals, radiological particles, and biological agents (overt releases) that produce victims who may need decontamination before medical care is administered.[12]

Protecting yourself

First and foremost, remember that no health care provider has ever received a significant radiation exposure by treating a contaminated patient.[3,4] Protection involves limiting your radiation exposure, the use of personal protective clothing, and contamination control. You can reduce your exposure through time, distance, and shielding. Limit time near a radiation source, increase your distance from the source, and use shielding between you and the radiation source.

Protective clothing in a radiation emergency is similar to that used in universal precautions and includes gowns, caps, masks, splash shields, and waterproof boots.[5,7,9] All open seams and cuffs should be taped using masking or adhesive tape. Two pairs of gloves should be worn. The first pair, preferably colored, should be worn under the arm cuff of the outer gown and secured by tape. The second pair of gloves should be easily removable and replaced if they become contaminated. The outer gloves should preferably be white to clearly show if the outer glove has been removed and not replaced. A radiation dosimeter should be assigned to each team member and attached to the outside of the surgical gown at the neck, where it can be easily removed and monitored by a radiation safety officer. Waterproof aprons can be worn when using liquids for decontamination.[5,7]

The Nuclear Regulatory Commission limits the exposure of pregnant workers to 5 mGY for the entire pregnancy.[9] Therefore, during a radiation emergency pregnant hospital workers should be reassigned to areas where exposure is unlikely.

Remember, unlike most hazardous materials, radioactive material can be easily detected, even in small quantities, with the use of a simple and readily available survey meter, such as a Geiger counter.[7] The purpose of donning extra clothes mentioned above is to give yourself a layer of clothing to keep your own clothes and body from becoming contaminated.

Organizing for an incident

Detailed response procedures are beyond the scope of this article; however, the website of the Radiation Emergency Assistance Center/Training Site (REAC/TS) at the Oak Ridge Associated Universities (www.orau.gov/reacts/) has demonstrations of using protective clothing, prepping a treatment area, removing contaminated clothing, surveying for contamination, and decontaminating wounds and intact skin.

If your hospital receives advance notification, you should implement your hospital's radiation emergency plan. Your primary goal should be to provide patient care while limiting the spread of contamination. Preparation is great if you have the time, but if you have an unstable patient who arrives, the priority is to stabilize the patient.

Select a treatment area near an outside entrance. Remove any equipment that will not be needed and assemble any additional required items. This will include a survey meter (Geiger counter), extra 4x4s, ABD pads, small and large sample bags, surgical drapes, tape, and irrigation solution. You will also need a number of large plastic-lined waste containers. The treatment beds should be covered with several layers of waterproof sheets that can be removed as you decontaminate the area.

Check your survey meter to obtain and record a background reading. This reading will be used to compare readings with the patient. The goal for removing contamination is to get as close to the background level as possible. The average background reading is 20 to 60 counts per minute.[5]

REAC/TS gives the following guidelines:[5]

General:

- If in doubt, assume contamination.
- Avoid contact with contaminants.
- Do not eat, drink, or smoke in areas where radioactive materials are located.
- Wear protective clothing.

When providing emergency care:

- Set up a controlled area large enough to hold anticipated number of victims.
- Prevent tracking of contaminants by covering floor areas with paper if your hospital plan calls for it. Some hospitals with nonporous floors like linoleum have made the decision not to cover them.
- Monitor and restrict access to the controlled area through the use of security personnel.
- Use a buffer zone or secondary control line for added security.
- Use a radiation meter and assess anyone or anything leaving the controlled area to prevent further contamination, taking special care with hands, feet, and face. People exhibiting radiological contamination must remain in their controlled area until they can be sufficiently decontaminated or wrapped in sheets if their medical condition requires their emergent movement to another section of the hospital.
- Use strict isolation precautions, including double bagging of all wastes and protective clothing.
- Control waste by using large plastic-lined containers for clothing, linens, dressings
- Control ventilation to prevent airborne contamination.
- Survey hands and clothing with radiation meters at frequent intervals. Change instruments, outer gloves, drapes, etc., when they become contaminated or when preparing to touch "clean" areas.

Specimens to Help Assess Radiation Injury[10,13]

Specimens	Rationale
All patients	
CBC with differential and absolute lymphocyte count. (Be sure to record the time the sampleis taken.)	Lymphocytes are very radiosensitive. Drops in serial counts during the first 48 hours can aid in estimating the severity of whole-body dose if one occurred
Routine urinalysis	Determine whether kidneys are functioning normally. Establish a baseline of urinary constituents.
External contamination suspected	
Swabs from body orifices, wound dressings, or wounds	Assess the possibility of internal contamination.
Internal contamination suspected	
24-hour urine collections x four days. Fecal collections x four days.	Assess the extent of internal contamination.

- Use waterproof materials to limit the spread of contaminated liquids, for example, waterproof surgical drapes.

Triage

The goal of triage is to evaluate and sort victims for priority in treatment to do the greatest good for the most people.[6] In many radiological events, the vast majority of people involved will be exposed to very low doses of radiation (if they are exposed at all). In these cases, there will be no immediate effects, with a potential for delayed effects depending on the dose received. Remember that if patients have only been exposed and do not have radioactive material on their person, there is no need to take any unusual precautions.[5] They can be cared for like any other emergency case.

People who are uninjured or minimally injured and stable should be evaluated at the scene. Removal of clothing and washing the skin with warm soap and water is 95% effective in removing contamination.[4]

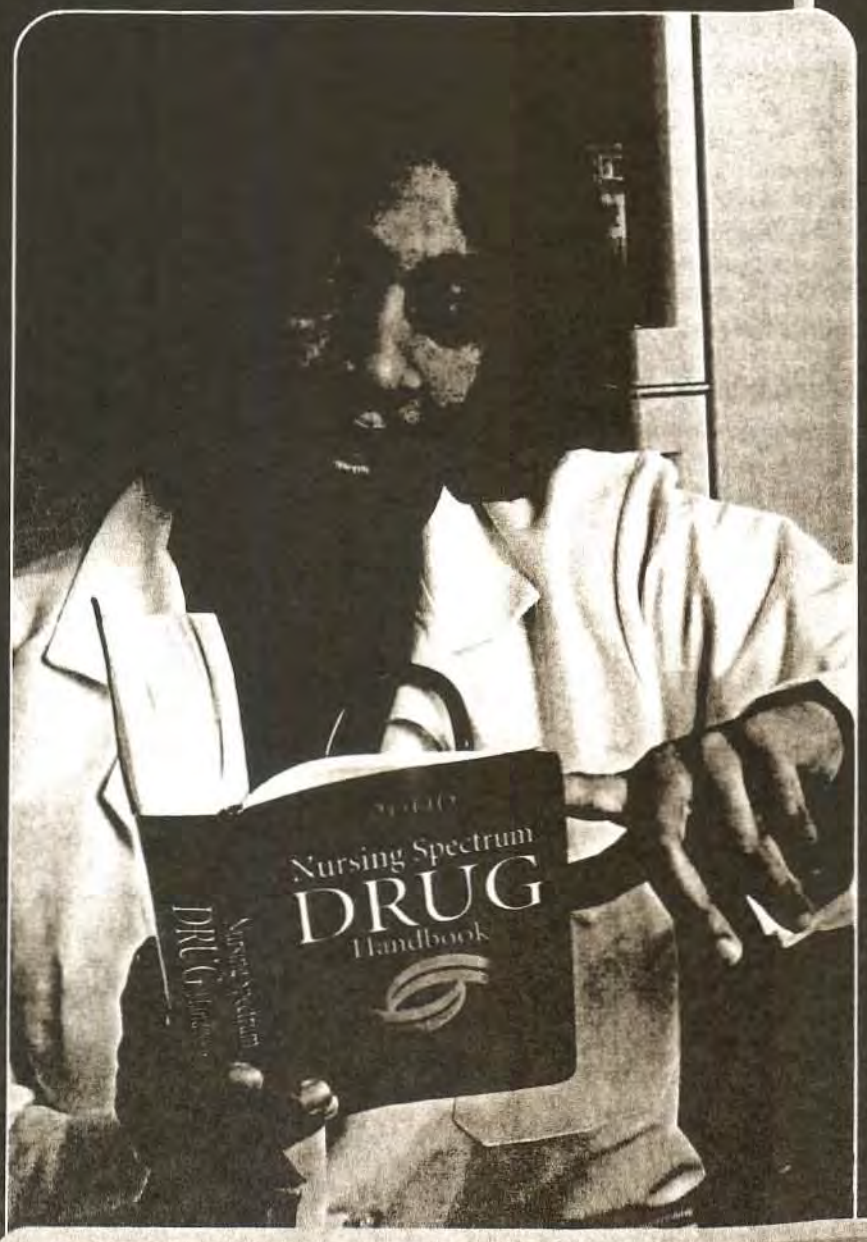
Some people may be exposed to doses large enough to cause immediate effects. The onset of nausea, vomiting, fatigue, and anorexia within hours usually indicates a significant and lethal radiation dose.[7,8]

Most patients in the immediate vicinity of a dirty bomb will present with symptoms of blast or burn (chemical or thermal) injury in addition to radiation exposure.[6] Patients who have combined injury will have increased morbidity compared to patients who received the same dose of radiation without trauma.

Assessment and treatment of serious medical problems is the No.1 priority.[5,7] Never delay critical interventions because you are concerned about contamination. Patients with life-threatening presentations, such as a compromised airway or severe hemorrhage, should receive enough immediate treatment to preserve life and to be stabilized. While the health team conducts the standard ABC's of triage, the radiation safety officer will quickly survey the patient. A quick survey tells you whether you are dealing with a contaminated patient.

Once stabilized, patients should have all their clothes removed for a more definitive survey. Care should be taken not to spread the contamination around. Clothing should be cut off, not ripped, from head to foot (away from the airway) and rolled outward so that the outer surface that is most likely more contaminated is rolled away from the patient. Before log rolling the patient, you should change your gloves because you have touched the patient's outer garments and are likely contaminated. Sheets and clothing should be double bagged, labeled, and removed from the treatment room to prevent them from causing inaccurate survey readings.

Decontamination involves removing external contamination and is conducted first in open wounds, then in or near body orifices, and finally on intact skin.[5] Open wounds are a direct pathway for internal contamination and should be decontaminated as soon as medical priorities permit. Decontamination of intact skin can be delayed because most radioactive materials are not readily absorbed through intact skin in the first hour after contact.



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Most patients in the immediate vicinity of a dirty bomb will present with symptoms of blast or burn (chemical or thermal) injury in addition to radiation exposure.

Decontamination is accomplished by simple irrigation or gentle washing with soap and water starting at the outside of the area and circling inward. First washes have the greatest chance of removing large amounts of contaminated material. Do not scratch or abrade intact skin while trying to get it clean or you risk internal contamination. Care must be taken not to spread contamination through splashes or water spills. Field dressings and embedded particles should be removed using tongs to maintain as much distance between a possible source and your fingers as you can. Decontamination should continue until efforts are no longer giving you lower survey readings. Decontaminated wounds should be bandaged with sterile waterproof dressings.[5]

The dose received is determined by dosimeter readings; biological changes are determined by lab tests, accident reconstruction models, and other methods.[9,13] Doses can be estimated by observing the onset of signs and symptoms, especially vomiting, and observation of lymphocyte depletion.[1,7] Elements of the history most important in assisting with dose calculations are presence of nausea, vomiting (start date, time, and severity), tachycardia, fatigue, weakness, abdominal pain, headache, and fever; any drug therapy used; and the results of any cytogenetics. It is important to note any recent nuclear medicine tests. See table for the specimens that help assess radiation injury.

Initial care

If a patient has received an acute dose greater than 1 Gy (100 rad), efforts must be made to close wounds, cover burns, reduce fractures, and perform surgical definitive treatments within the 48 hours after injury, before pancytopenia, immunosuppression, and delayed healing occur. After 48 hours, surgical interventions should be delayed until hematopoietic recovery has occurred, which usually takes about three months.[9]

Definitive care options

Patients with higher exposures will require hospitalization. Because they will be immunosuppressed, consider the use of a burn unit. Treatment is symptomatic and should target the prevention of infection. Antibiotics should be given to sterilize the gut and treat opportunistic infections. Hematopoietic growth factors to stimulate blood cell production should be given within the first 24 to 48 hours and then daily.[6,13]

Acute radiation syndrome

Acute radiation syndrome (ARS) is characterized by the following: the radiation dose must be large (greater than 0.7 Gy or 70 rads); the dose usually must be external; the radiation must be penetrating; the entire body or a significant portion of it must have received the dose; and the dose must be delivered in a short time. ARS usually has four stages, whose length and severity depend on the dose received:

- Prodromal stage: the classic symptoms for this stage are nausea, vomiting, and possibly diarrhea beginning minutes or days after the exposure.
- Latent stage: In this stage, the patient generally looks and feels better. This stage can last for a few hours or a few weeks.
- Manifest illness state: Symptoms are dose-dependent and determined by the type of specific syndrome the patient is exhibiting. This stage may last from hours up to several months.
- Recovery or death: For those who recover, the process may last from several weeks up to two years. Those who do not recover will die within several months of exposure.

(See the chart on the next page for three classic categories of ARS.)

Where you can learn more

Several websites contain excellent information that can be used to augment your knowledge or serve as "just in time" learning if you are confronted with a radiation emergency.

- Radiation basics: www.orau.gov/reacts/define.htm
- Radiation emergencies: www.bt.cdc.gov/radiation/
- Hospital triage in the first 24 hours after a nuclear or radiological incident: www.orau.gov/reacts/triage.pdf
- Acute radiation syndrome: www.bt.cdc.gov/radiation/arsphysicianfactsheet.asp
- Prenatal radiation exposure: www.bt.cdc.gov/radiation/prenatalphysician.asp
- Software to record radiological incidents and assess dose rates: www.afrri.usuhs.mil
- Procedures for patient care in case of terrorism with ionizing radiation: www.afrri.usuhs.mil/www/outreach/pdf/pcktcard.pdf
- Procedures for managing radiation emergencies: www.orau.gov/reacts/procedures.htm

Several universities and federal agencies offer Web-based classes that provide continuing education credit at no cost. Examples include:

- The Emergency Management Institute (part of the Federal Emergency Management Agency of the Department of Homeland Security) offers a wide variety of courses: http://training.fema.gov/EMIWeb/IS/crslist.asp.
- The Centers for Disease Control and Prevention has offered two web-based courses on treatment of radiological patients. The "Role of Public Health in a Nuclear or Radiological Terrorist Incident" can be found at www.phppo.cdc.gov/phtn/default.asp and "Medical Response to Nuclear and Radiological Terrorism" at www.phppo.cdc.gov/PHTN/webcast/radiation-4/default.asp.
- The University of Albany offers "Terrorism, Preparedness, and Public Health: An Introduction," a six-module online course that includes a section on radiological weapons: www.ualbany-cphp.org/learning/registration/detail_Terrorism.cfm.
- The Health Alert Network (HAN) site contains links to recent CDC news releases and to the Public Health Training Network, both providing up-to-date information to medical professionals. HAN also maintains a jurisdictional map with links to state and federal public health agencies and an archive of disseminated health messages: www.phppo.cdc.gov/han/

Serious medical problems always have priority over radiological concerns, and immediate attention is given to life-threatening problems. As mentioned earlier, no health care provider has ever received a significant radiation exposure by treating a contaminated patient. Initial and definitive care is symptom-driven and supportive. Most importantly, managing a radiation incident involves preparation, planning, practice, and the realization that contaminated patients do not present an immediate threat, but simply require special handling. While it is impossible to prevent radiological incidents, it is possible to raise awareness and set in place emergency plans and systems that allow for activities to prepare for and respond to future radiological emergencies.

Cmdr. Lynn Slepski, RN, MSN, CCNS, is an officer with the United States Public Health Service assigned to the Integration Staff of the Department of Homeland Security. The views presented are those of the author and do not necessarily represent the views of the U.S. Government or the U.S. Department of Homeland Security and its components. The author has declared no real or perceived conflicts of interest that relate to this educational activity.

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1. **_____ are emitted at the time of a nuclear detonation.**
   - a. alpha particles
   - b. beta particles
   - c. gamma rays
   - d. neutrons

2. **Common sources for radioactive materials include all except —**
   - a. Nuclear power plants.
   - b. The Mall of America.
   - c. University research centers.
   - d. Medical radiotherapy clinics.

3. **The most likely potential WMD scenario involving a radiological incident is —**
   - a. Detonation of a nuclear bomb.
   - b. Attack on a nuclear power plant.
   - c. Detonation of radiological dispersion device.
   - d. Placement of a hidden source.

4. **_____ occurs when radioactive material is on the skin.**
   - a. Exposure
   - b. Disruption
   - c. Contamination
   - d. Incorporation

5. **_____ would be considered part of a radiosensitive population.**
   - a. A 15-year-old student
   - b. A 35-year-old medical technician
   - c. A 45-year-old government worker
   - d. A 62-year-old checkout clerk

6. **Which of the following is a way of minimizing your exposure to a radiation source?**
   - a. Spend as much time in a radiation area as your patient requires.
   - b. Get as close to the source as possible.
   - c. Wear a dosimeter when approaching source.
   - d. Use shielding between the source and people.

7. **The NRC radiation exposure limit for an entire pregnancy is —**
   - a. 3 mGY
   - b. 5 mGY
   - c. 7 mGY
   - d. 9 mGY

8. **The driver of a passenger van transporting medical waste is seriously injured in a motor vehicle accident involving a rupture in the waste container. He has just been brought out of the accident area by EMS and is pulling up to your ER. Your first priority is —**
   - a. Medical triage and stabilization of any life threatening problems.
   - b. Survey and decontamination before anything else.
   - c. Learn the identity of the medical waste he was transporting.
   - d. Implement your hospital's emergency plan.

9. **During hospital emergency care, after removing the victim's contaminated clothing you should complete —**
   - a. Decontamination of intact skin.
   - b. Assessment and treatment of serious medical problems.
   - c. Collection of samples for analysis.
   - d. Decontamination of wounds.

10. **The most immediate concern regarding a person with radioactive contamination in an open wound is —**
    - a. Infection.
    - b. Tissue necrosis.
    - c. Internal contamination.
    - d. Development of a local radiation injury.

11. **Dose received is determined by all of the following except —**
    - a. CT scan
    - b. Dosimeter readings
    - c. Biological changes determined by lab tests
    - d. Accident reconstruction methods

12. **If a patient has received an acute dose greater than 1GY, efforts must be made to close wounds, cover burns, reduce fractures and perform surgical definitive treatments within —**
    - a. 24 hours.
    - b. 36 hours.
    - c. 48 hours.
    - d. 72 hours.

ce ANSWER FORM CE 363 — Radiation Incidents and Emergency Preparedness

1. a.○ b.○ c.○ d.○
2. a.○ b.○ c.○ d.○
3. a.○ b.○ c.○ d.○
4. a.○ b.○ c.○ d.○
5. a.○ b.○ c.○ d.○
6. a.○ b.○ c.○ d.○
7. a.○ b.○ c.○ d.○
8. a.○ b.○ c.○ d.○
9. a.○ b.○ c.○ d.○
10. a.○ b.○ c.○ d.○
11. a.○ b.○ c.○ d.○
12. a.○ b.○ c.○ d.○

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(Please print clearly.)

Name _____

Address _____

City _____ State _____ ZIP _____

Phone # _____/_____–_____
optional

Home E-mail _____
optional

EVALUATION

1. Can you explain the basic principles of radiation and possible scenarios for radiological incidents? yes ○ no ○
2. Can you discuss the injuries, radiological contamination routes, presenting signs and symptoms, and treatments associated with radiological incidents? yes ○ no ○
3. Can you discuss the basic roles and responsibilities of nurses in responding to a radiological mass casualty incident? yes ○ no ○
4. Can you name additional resources that nurses can call on to learn more? yes ○ no ○
5. Were the objectives relevant to the goal of this program? yes ○ no ○
6. Was the teaching method effective? yes ○ no ○
7. Did this offering meet your objectives? yes ○ no ○
8. How much time did it take to complete this program? _____
9. Additional comments/suggested future topics: _____

Soc. Sec. No.
☐☐☐–☐☐–☐☐☐☐

☐ Check this box if CE is for **FL licensure**, and list complete FL license number.

☐ Check this box if CE is for **PA licensure**. Social Security # required by state.

License No. _____ State _____

License No. _____ State _____

Tests cannot be processed without a nursing license #.

Specialty _____

Fax Number _____

METHOD OF PAYMENT ($10 processing fee)

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○ MasterCard ○ AmEx

Card account number
☐☐☐☐☐☐☐☐☐☐☐☐☐☐☐☐

Credit card expiration date ☐☐☐☐

The above information is correct to my knowledge. I agree to pay the continuing education processing fee of $10 per study according to my credit card issuer agreement.

Signature _____

Date _____

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Received: REA
Office of Research

REA Date Stamp: [illegible]

USUHS FORM 3204
RESEARCH INVOLVING HUMAN SUBJECTS
(new or modification/addendum)

Protocol No.: _____

Principal Investigator: Lynn Slepski

Department: GSN **Phone** (202) 282-9697

E-Mail: Lynn.Slepski@dhs.gov **Pager or Other Phone Number** (202) 528-7086

Project Title: Emergency Preparedness and Professional Competency Among Health Care Providers During Hurricanes Katrina and Rita

PLEASE PROVIDE RESPONSES TO THE FOLLOWING:

1. New protocol or ___X___ Modification/Addendum

2. Indicate the pages of proposal specifically applicable to the involvement or enrollment of volunteers, private information, or human-derived products.
   Pages: 63

3. Check procedure(s) to be used:
   - _____ Use of genetic testing or DNA analysis.
   - _____ Use of blood or blood products: ( ) Blood Draw ( ) Blood Bank ( ) Other
   - _____ Use of human tissue and/or bodily fluids including excreta and external secretions (sweat, saliva, amniotic fluid at the time of rupture of membrane).
   - _____ Hair and/or nail clippings.
   - _____ Teeth and/or dental material including plaque and calculus.
   - _____ Prospective collection and use of donated, pathological and/or diagnostic specimens. **(Refer to question 15)**
   - _____ Use of existing pathological and/or diagnostic specimens.
     - From where are these specimens being obtained?
     - Can the subjects from whom these specimens were obtained be identified directly or by the use of encoded identifiers?
       ( ) Yes ( ) No **(Refer to question 15)**
   - _____ Use of human cell lines: ( ) Primary ( ) Immortalized
   - _____ Moderate exercise by healthy volunteers.
   - _____ Recording of data using noninvasive procedures used in clinical practice.
     - Identify:
   - _____ Study of existing data, documents, and/or records.
     - From where are these data being obtained?
     - Can the subjects from whom these data were obtained be identified directly or by the use of encoded identifiers?
       ( ) Yes ( ) No

__X__ Survey, interview, or educational (cognitive, diagnostic, aptitude, achievement) test or procedures or observation of public behavior.

- Can the subjects be identified directly or by identifiers?
  () Yes (**X**) No
- Do the data collected involve sensitive information (e.g., drug and alcohol use, sexual practices, child or spousal abuse, or other information that could be criminal or damaging to one's financial or social standing, employability, insurability, or psychological well-being)?
  ( ) Yes (**X**) No

_____ Use of normal educational practices in accepted educational settings such as instructional strategies, effectiveness of or comparison among instructional techniques, curricula or classroom management methods.

_____ Use of taste and food quality evaluation and consumer acceptance studies?

4. Indicate the age and sex as well as the physical and psychiatric condition of the volunteers to be enrolled.
   Age: **18 or older**
   Gender: **males and females**

Participants who meet the following criteria will be selected for inclusion in the study:

Health Care Providers

1. **Healthcare professional [MD/DO and RN]**
2. **Worked on-site in a disaster response for either Hurricane Katrina or Rita in Alabama, Louisiana or Mississippi.**
3. **Worked at the disaster site for a minimum of 14 consecutive days (two weeks)**
4. **Age 18 or older**

5. Indicate the total number and rate of enrollment of volunteers.
   Total number: **2000** (entire project)
   Rate: **500/month** (#/ time period)
   Phase II/ Mar – Jun 07(#/ time period)

6. If applicable, explain with a compelling rationale the exclusion or under representation of one gender and/or minorities from the subject population.
   NA

7. Explain the inclusion of any vulnerable population (e.g., children, pregnant women, prisoners, cognitively impaired persons) and why that population is being studied.
   NA

8. State how physical and psychiatric condition will be determined and by whom.

Phase II particpants will be a convenience sample of health care providers who were involved in the Katrina disaster response.

9. If normal volunteers are to be enrolled, state how this will be determined.
Only Hurricane Katrina or Rita healthcare professionals will be recruited for Phase II of this study.

10. Describe the status of the volunteers relative to the principal investigator and/or USUHS (e.g., patient at Walter Reed, active duty, students, civilian employees, etc.)
The participants will be recruited from Hurricane Katrina and Rita disaster sites and will have no relationship to the PI or USUHS.

11. Describe the status of the volunteer's Attending Physician to the project including his or her role in safeguarding the rights of the volunteer.
Participants will provide a waiver of informed consent—they will affirm their understanding after reading an informed consent statement by clicking a button "I consent to participate".

12. Identify the specific procedures, issues, and/or experimental drug administration involving the volunteers that are important for the IRB to consider. Describe possible risks, ethical issues, and/or side effects for each. Factors to consider including, but are not limited to, the following:

    A. What is the volunteer being asked to do which they would not be doing unless part of this research project?
    (1) Before inclusion in the study, participants will be informed of the potential risks associated with this study.

    In Phase II of this study participants will be asked to:
    (1) Complete a web-based demographic questionnaire
    (2) Answer a de-identified, anonymous web-based survey.

Procedures for Protecting Against Risks: Before inclusion in the study, participants will be informed of the potential risks associated with this study.	
Intervention/ Data Collection	**Potential Risk**
Phase II	
Demographic Questionnaire	**NONE:** No potential risks are associated with the questionnaire. Participants may skip any question without penalty. Failure to complete any question will remove that participant from the sample being compared.
De-identified, anonymous survey	**NONE:** No potential risks are associated with this test. Participants may refuse to complete the test or fail to meet the cut score. Refusal or failure to meet the cut score will result in those participants being excluded from the study.

B. Does the research collect personally sensitive information (e.g., drug and alcohol use, sexual practices, child abuse)? If so, how is confidentially protected?
No

C. Does the research involve deception of the subject? If so, how is the subject debriefed after completion of the project?

No

13. If this study involves the administration of drugs not approved by the FDA, state how approval will be obtained.

NA

14. Do any of the investigators have an equity or consultative relationship with a non-USUHS source related to this protocol which might be considered to be a conflict of interest? (If yes, please include a statement of disclosure.)

No

15. Unless otherwise contained in your protocol, if using prospectively collected tissue, or any tissue linked to subject/patient identifiers, indicate:

A. How, where, and for how long will tissue/samples be stored?

NA

B. Will patient data that can or will be linked to the tissue/samples be collected?

NA

C. Will linkage to subjects be maintained or will samples be delinked?

NA

D. Will any tissue/samples be left over at the end of the study and if so, what will be done with the tissue/samples?

NA

16. Describe fully the modification(s) to your existing protocol to include rationale, procedures, numbers of subjects, etc. (Use blank pages if additional space is required.)

NA

I have read and will comply with USUHS Instruction 3201, *"The Use of Human Volunteers in Research at the Uniformed Services University of the Health Sciences,"* March 1999.

I have read, understood, and will comply with the tenets contained in the Belmont Report ("Ethical Principles and Guidelines for the Protection of Human Subjects of Research," The National Commission for the Protection of Human Subjects of Biomedical and Behavioral Research, April 18, 1979. URL: http://ohrp.osophs.dhhs.gov/humansubjects/guidance/belmont.htm).

Principal Investigator (signature)

7 Apr 2007

Date

APPENDIX A: PHASE II INFORMED CONSENT STATEMENT

The following text will be posted at the beginning of the survey. The subject will electronically affirm understanding of the following informed consent statement by "clicking" a button prior to starting the survey itself. Completion of the survey will serve as an indication of consent to participate in the study.

Informed Consent Information

Research Study

Emergency Preparedness and Professional Competency Among Healthcare Providers During Hurricanes Katrina and Rita: Phase I Interview

INTRODUCTION

You are being asked to take part in a research study. Before you decide to be a part of this research study, we would like to describe the study purpose and procedures to you. Your decision to take part in the study is voluntary. This means that you are free to choose if you will take part in the study.

PURPOSE AND PROCEDURES

The *Uniformed Services University of the Health Sciences* is conducting a study investigating emergency preparedness and professional competency. This study is specifically about the professional skills, knowledge, and abilities needed by healthcare providers who responded to Hurricanes Katrina or Rita. You have been asked to participate in this study because you are either a registered nurse or medical doctor who participated as a health care provider in the response to the hurricane Katrina disaster.

This questionnaire is Phase II of a two part study. The first phase of the study identified health care competencies that were reported to be most important to medical personnel who responded to the Katrina disaster. This second phase of the study will ask detailed questions about these competencies, as well as a variety of questions about your activities as a health care emergency responder during Katrina. Approximately 2,000 people will take part in Phase II of this study. The goal is to use this information to inform future disaster preparation and response.

POSSIBLE BENEFITS AND RISKS

This is a research study and is not designed to provide any benefit to you. It is possible that the results of this study will lead to better understanding of the professional needs of health care providers who respond to disasters. There are no anticipated risks to you due to participation in this study.

COMPENSATION

You will not be compensated for participation in this study.

PARTICIPATION

Your participation in this study project is voluntary. You may elect to discontinue the questionnaire at any time, or to skip questions that you do not wish to answer.

AMOUNT OF TIME FOR YOU TO COMPLETE THIS STUDY

The total estimated total time required to complete this survey should not exceed one hour.

PRIVACY AND CONFIDENTIALITY

All information you provide as part of this study will be confidential and will be protected to the fullest extent provided by law. Information that you provide and other records related to this study will be accessible to those persons directly involved in conducting this study and members of the Uniformed Services University of the Health Sciences Institutional Review Board (IRB), which provides oversight for protection of human research volunteers. All questionnaires, notes and other materials will be kept in a restricted access areas while not in use. The Principal Investigator will destroy data associated with this study when they are no longer required for data analysis. If you are a military member, please be advised that under Federal Law, a military member's confidentiality cannot be strictly guaranteed.

IF YOU HAVE ADDITIONAL QUESTIONS OR CONCERNS

If you desire additional information about this research study, or if any problems arise related to this study with regard to your rights as a participant, or with regard to any related injury, please contact Principal Investigator, Lynn Slepski, at 202 528-7086 or 800-918-6179, or via the Graduate School of Nursing, Uniformed Services University of the Health Sciences, 4301 Jones Bridge Road, Bethesda, MD 20814-4700. If you have any questions about your rights as a participant in this research study, you may also contact the Office of Research, Uniformed Services University, 4301 Jones Bridge Road, Bethesda, MD 20814, Phone 301-295-3303. If you believe the government or one of the government's employees has injured you, a claim for damages (money) against the federal government (including the military) may be filed under the Federal Torts Claims Act. Information about administrative or judicial avenues of compensation is available from the University's General Counsel at (301) 295-3028.

YOUR CONSENT TO PARTICIPATE

By clicking "I consent to participate" below you are agreeing that you understand the study and that you would like to participate. Please print a copy of this informed consent information sheet for your records.

PHASE I RESULTS

Finally, when asked to provide recommendations for future responders, responses grouped as follows:

Table 4: Recommendations for Future Responders (Slepski, Unpublished pilot)

Category of Response	Number Total=495	Examples of responses
Attributes or Attitudes	N=105	Included the term "flexible" i.e. "be flexible" (59) Be patient Have a sense of humor
What to Pack	N=66	Have a pack list to remember everything Bring moleskin Bring your own food and water Equipment for the worse case/austere environment
Personal Preparedness	N=115	Prepare yourself mentally to deal with austere conditions Prepare my family for their hardships. Sign medical power for kids Find out as much as you can about where you are going/doing Be ready for anything-be prepared to work in a different role
Self-care	N=26	Make sure you eat and keep hydrated Prioritize work/rest periods for yourself and subordinates
System Issues	N=60	Small library of medical references Standardized forms and reports/ report schedules Protocols and SOPs
Training	N=123	Drill and exercise (9) Non-medical topics—environmental health issues/ ICS/ NRP (19) Field experience—low/no technology (4) Get specific training (15) ACLS (4) Basic skills (1) First aid (2) Suturing (1) Triage (5) Wound care (2)

Of note, only 25% (N=123) of the respondents recommending training, of which 3% (N=15) actually recommended a specific type of training such as ACLS or triage. Rather, respondents recommended **actions that improved them personally or as a member of their team or larger response group**.

REA Date Stamp

USUHS FORM 3204A
RESEARCH INVOLVING HUMAN PARTICIPANTS
(continuing/annual review)

SECTION I PROTOCOL INFORMATION

Protocol No.: HU61GR

Principal Investigator: CAPT Lynn A. Slepski

Department: Graduate School of Nursing

E-Mail: lslepski@usuhs.mil

(202) 282-9697

Pager or Other Phone Number (800) 918-6179

Project Title: Emergency Preparedness and Professional Competency Among Health Care Providers During Hurricanes Katrina and Rita

SECTION II STATUS OF THE STUDY {Mark the status of the study (a-g) and note the specific information that must be submitted}.

a. ____ **No participants accrued/data collected in this study** - termination requested. [Complete section III only].

b. ____ **Participant accrual/data collection for this study is pending** - continued approval requested. [Submit Sections III and IV (2, 8, and 10)].

c. X ____ **Active with ongoing participation of subjects/data collection: Participant accrual/data collection not completed.** [Submit Sections III and IV (1 and 3-11)].

d. ____ **Active with ongoing participation of subjects: Participant accrual completed.** [Submit Sections III and IV (1 and 3-9)].

e. ____ **Active with follow-up of participants only.** [Submit Sections III and IV (4 only)].

f. ____ **Active with data analysis only: Subject participation/data collection completed.** [Submit Sections III and IV (1 - 4).]

g. ____ **Completed. Participants will not be followed/data analysis completed.** Date of Completion: ____ [Submit Sections III and IV (1 and 3-9) as a final human participant use report.

SECTION III. CERTIFICATION OF PRINCIPAL INVESTIGATOR

Signature certifies that the above titled research has been/will be conducted in full compliance with the DHHS/FDA Regulations and USUHS IRB requirements/policies governing human participant research. It is understood that IRB continuing review is required in order to maintain study approval and that **ANY** changes in the study/methodology which affect the participants must be approved by the IRB prior to implementation. Alternatively, if the study has never been

initiated and you are requesting termination (II[a] above), your signature verifies this request. If the study is completed (II[g] above), the information provided on this form represents an accurate final human research report.

Signature of Principal Investigator

Date

SECTION IV SUMMARY OF RESEARCH (use additional sheets as necessary)

DEMOGRAPHIC INFORMATION

1. **Target Accrual number:** What is the target accrual number approved by the IRB? Phase 1 = 100 (or more)

2. **Non-accrual:** If no participants have been accrued since the last IRB review, the reason(s) for non-accrual must be provided.

3. **Number of participants accrued since last review:** How many participants have been accrued since last review? 223

Total number of participants accrued since activation of the study:

Adults	American Indian or Alaska Native	Asian	Black or African American	Hispanic or Latino	Native Hawaiian or Other Pacific Islander	White or Caucasian	Other or Unknown	Total
Male								
Female								
Total Adults								223

Children	American Indian or Alaska Native	Asian	Black or African American	Hispanic or Latino	Native Hawaiian or Other Pacific Islander	White or Caucasian	Other or Unknown	Total
Male								0
Female								0
Total Children								0

STUDY RESULTS

4. **Study Progress/Results:** Provide a brief summary of study progress/results (preliminary or final) obtained in the study. If the study is part of a cooperative group or multi-center trial, a copy of the most recent group-wide progress report must be attached. See Attached.

ADVERSE EVENTS AND PROBLEMS

5. **Unanticipated adverse event(s):** From initial approval of the study to the present, has any participant enrolled in your study suffered an unanticipated adverse event? If the answer is yes, specify the total number of events, date(s) and summarize briefly the overall nature and significance of the adverse event(s). NO

PARTICIPANT WITHDRAWAL

6. **Involuntary participant withdrawal:** Was any participant withdrawn from your study because of medical complications or other problems? If the answer is yes, provide a brief

description of the medical complication/problem for each participant who was involuntarily withdrawn. NO

7. **Voluntary participant withdrawal:** Did any participant voluntarily withdraw from your study for non-medical reasons? If the answer is yes, provide a brief description of any known reason(s) for each participant who voluntarily withdrew from the study.

   NO

CURRENT RISK/BENEFIT ASSESSMENT

8. **Current Risk/Benefit Assessment:** Has anything occurred since the last IRB review that may have altered the risk/benefit relationship? If the answer is yes, provide a current assessment, in your opinion, of the risk/benefit relationship based upon study results, adverse events, or other factors. NO

INFORMED CONSENT EVALUATION

9. **Informed consent process:** Did any problems occur relative to the obtainment and documentation of informed consent since the last IRB review? If the answer is yes, please provide a brief description of the problems. NO

10. **Informed consent document:** Is the approved informed consent document still acceptable (i.e., the information contained in the document is accurate and complete and there is no new information, which should be disclosed to the participant)? ***If in your opinion the approved informed consent document is still acceptable, this must be stated and a clean copy of the form(s) must be submitted with this form on USUHS letterhead for a continuing approval stamp.*** If, however, revisions are necessary, this must be stated and a new USUHS Form 3204 must be submitted along with this annual review. New form submitted for web-based Phase II.

11. **Equity or consultative relationship:** Have any investigators developed an equity or consultative relationship with a non-USUHS source related to this protocol which might be considered to be a conflict of interest? ***(If yes, please append a statement of disclosure.) No***

12. **Literature review:** Indicate that you have completed an updated scientific literature review LAS **(initial)**. Please list any relevant scientific publications that you found in the literature, and discuss whether and how the results of these published studies impact the risk-benefit relationship of your study.

Emergency Preparedness and Professional Competency Among Health Care Providers During Hurricanes Katrina and Rita

Uniformed Services University Protocol HU61GR

Version:12 March 2007

Research Protocol Prepared by:
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"Hurricane Katrina was in every respect the storm of the century, not only because of the numbing scale of devastation it left in its path, but because of the furor it unleashed over how the relief effort was handled"

Don Philpott (September, 2005)

ABSTRACT

To date there has been no systematic examination of the preparedness of individual health care providers and their response capabilities during a large scale disaster. As a result very little is known about what knowledge, skills and abilities, or *professional competencies*, are needed, or how professional competency requirements may change depending on circumstances of a disaster. This information is critical in designing effective training content to prepare health care professionals who may be called upon to respond to disasters.

The objective of this study is to examine the issue of emergency preparedness and professional competencies of individual healthcare responders who served during Hurricanes Katrina and Rita. The study will be executed in two phases. Phase I, conducted in April and May of 2006, examined health care provider competencies relevant to the Katrina disaster and consisted of interviews with health care providers and subject matter experts as well as 200 responses to an anonymous questionnaire. Results of Phase I informed the development of a larger web-based questionnaire of health care professionals who directly participated in the Katrina response. This web-based questionnaire will be executed as Phase II and will focus on two specific professional competencies highlighted in Phase I in order to assess the issue of individual health care provider preparedness at the time of Katrina and Rita and pathways to better performance in the future.

This is an amendment to the Phase I protocol. This amended protocol incorporates results from Phase I and describes Phase II procedures and instrumentation.

TABLE OF CONTENTS

In September 2005, Hurricane Katrina, a Category 5 hurricane, and Hurricane Rita, a Category 4 hurricane, affected over one and a half million people located within approximately 90,000 square miles spanning the states of Louisiana, Mississippi, and Alabama. As a result, over 770,000 persons were displaced with 89,000 persons (11.5%) evacuated to make-shift shelters. The medical infrastructure in the Gulf Coast sustained extraordinary damage. The resulting deaths and destruction triggered the largest natural disaster relief and recovery operations in United States history and created an unprecedented demand for relief healthcare services. National response plans and annexes call for the establishment of alternative, non-hospital, field medical facilities, staffed by volunteers, to treat thousands of victims of large-scale events. Federal planners assume that trained and competent healthcare workers will volunteer to staff these facilities, yet no studies have addressed whether volunteers are prepared and competent to function in these roles. Hurricanes Katrina and Rita were the first real tests of this alternative, non-hospital concept. According to most, the system stumbled or failed (Townsend, 2006). In many instances, local medical infrastructure collapsed, medical care surge capabilities were slow or misdirected, and frail, chronically ill were left with inadequate care.

Up to this time, no systematic examination of the preparedness of health care providers and their response capabilities during the individual phases of a large scale response has occurred. As a result very little is known about what knowledge, skills and abilities or professional competencies are needed or if these competencies change in each disaster phase. This information is critical in designing effective national response plans and future training content. Thus, to evaluate these possibilities, this study is designed to examine the specific professional competencies that were important to the response of health care providers during these disaster situations.

The terrorist attacks in September 2001 combined with the subsequent anthrax attacks exposed weaknesses in the public health infrastructure and drew U.S. policymakers' attention to the need for strengthened public health emergency preparedness at the local level (US. General Accounting Office, 2002). As a result, a number of groups are examining the issues and implementing programs aimed at enhancing response capability (Gilmore Commission, 2002).

Review of the Literature

Emergency preparedness

A key concept in disaster management and planning is "emergency preparedness." Although emergency preparedness is a concept frequently referred within medical literature, psychological literature, local and State and federal documents, it is not well defined. Emergency preparedness training similarly is not well delineated.

The term "emergency preparedness" has been used as the basis for individual, local, state and national preparedness plans. These plans are aimed at enhancing readiness, increasing the ability to respond to larger numbers of casualties, and improving response to terrorism and other public health emergencies. The achievement of emergency preparedness takes place through a process that involves planning, training and exercising in addition to the procurement of equipment (Perry & Lindell, 2003). The federal government, in conjunction with State and local authorities, has taken unprecedented steps to enhance preparedness on

multiple levels (Council on Foreign Relations, 2003). However, Turnock (2004) best summed up the lack of consensus of a definition of emergency preparedness in his comments:

> Currently, states are not clear about what is meant by preparedness and how it can be measured and recognized. In this definitional vacuum, states are left to fend for themselves, resulting in uneven and inconsistent approaches from state to state and from locality to locality within states (2004, p. 31).

Slepski (2005) recently published the first concept analysis of the term emergency preparedness, intended as a base for the development of specific competencies. She defines emergency preparedness as "the comprehensive knowledge, skills, abilities and actions needed to prepare for and respond to threatened, actual or suspected chemical, biological, radiological, nuclear or explosive incidents, man-made incidents, natural disasters or other related events" (p. 426).

Emergency Preparedness Training

Education and workforce training goals and strategies for emergency preparedness vary widely (U.S. Government Account Office, 2002). No standards are clearly defined and guidelines for emergency preparedness training do not exist (Council on Foreign Relations, 2003; Everly, 2002; Farmer, 2006; Rubin, 2004; Veenema, 2002). Waeckerle (2004) stated that there is no single source of authority or approved body of emergency preparedness content or curriculum, and as a result, there has been unfocused training and educational efforts. He noted that there is no program or policy office to integrate federal programs for emergency preparedness-related assistance and provide guidance to states and local communities. As Turnock (2004) pointed out, the responsibility for defining what types and quantities of services that are needed as well as what outcomes are desired and realizing them has been left to the states, raising the potential for inconsistency and lack of standardization of approaches from state to state.

In 2002, the Agency for Healthcare Research and Quality (AHRQ) commissioned an evidence report for the purpose of identifying the most effective methods of training clinicians for detection and management of a bioterrorism attack or other public health events. This report encompassed a review of 1,942 pieces of literature. The resulting report found that:

- there are no published validated measures of preparedness;
- few data that demonstrated the effectiveness of particular training interventions;
- no studies evaluated educational programs for bioterrorism or other public health events in particular; and
- no studies addressed how to update and reinforce the training of clinicians in how to respond to mass casualty incidents.

Competency

Wright (1998) in her seminal work on competency assessment defines core competencies as the "knowledge, skills, abilities, and behaviors needed to carry out a job" (p. 7). Competencies fulfill the organizational, departmental, and work setting requirements under the varied circumstances of the real world. Core competencies are based on key essential job functions; frequently used job functions and accountabilities; and, high-risk job functions and accountabilities that involve actions that could cause harm, death or legal actions to customers,

employees or the organization. Competencies are articulated in competency statements that are measurable. To make ongoing competencies meaningful and achievable, Wright asserts that no more than ten competencies should be addressed at any given time.

Several authors suggested the development of formal emergency preparedness educational core competencies (Chaffee, Conway-Welch, and Sabatier, 2001; Frykbert, 2003; Gebbie and Qureshi, 2002; Tilson and Gebbie, 2004) with competency-based objective evaluation (Trautman and Watson, 1995). A second group suggested that emergency preparedness training be required continuing education (Croasdale, 2002; Hilton & Allison, 2004; Jones, Terndrup, Frantz and Eitzen, 2002) or a requisite for medical privileges or licensure (Shadel et al., 2001). The Joint Commission on the Accreditation of Healthcare Organizations (JCAHO) requires measurement of competency in its accreditation process. In January 2001, JCAHO introduced new emergency management standards, building on its long-standing disaster preparedness requirements. One specific phase of the new standard includes determination of the priorities for, and means for effectively deploying, the finite resources needed to support response systems, including trained personnel.

In the absence of Federal criteria, several groups have independently attempted to develop core competencies for a variety of responders without any attempts to harmonize them across the many types of emergency responders. Those addressing healthcare include emergency medical technicians, emergency physicians and emergency nurses (NBC Task Force, 2001), emergency response clinicians (Association of Teachers of Preventive Medicine, 2003), hospital workers (Columbia University School of Nursing, 2001) and public health workers (CDC, 2002; Columbia University School of Nursing, 2001). Those specifically addressing nursing include the Columbia School of Nursing (public health and hospital nurses) (2001), the Association of Teachers of Preventive Medicine, advanced practice nurses)(2003), and the International Nursing Coalition for Mass Casualty Education (general nurses) (Stanley, 2003). Unfortunately the vision and resulting competency requirements are inconsistent across the groups. Further, no attempt has been made to validate if these competencies are correct and all-encompassing.

Gaps in the Literature and Recommendations

The term emergency preparedness is a new dimension in the continuum of health care and public health services that has emerged without any explication. Consequently, the gaps in science to support this increasingly important component of care are considerable. Work needs to be accomplished on multiple fronts: defining operational definitions for terms such as emergency preparedness and capacity; standardizing core competencies for various responder disciplines and types; developing training programs with a variety of modalities with specific outcomes as well as the metrics to measure performance. To begin to accomplish this, we must first determine what emergency preparedness professional competencies are—what knowledge, skills and abilities are needed, in each disaster phase of a hurricane response, a disaster that occurs each year. Later studies might address whether these professional competences are the same or different in other types of emergency response. Or, as Gebbie and Queshi (2002) suggest, that “the first step toward emergency preparedness is the identification of ***who*** needs to know ***how*** to do ***wha*****t**” (p. 50, emphasis added).

Emergency preparedness is emerging as a critical component of the U.S. health care system. No formal, systematic efforts have taken place to identify what constitutes emergency preparedness or what the core professional competencies are and whether they change by phase of or type of disaster. This study is proposed to begin to raise and document the answers

to these questions by specifically addressing emergency preparedness and professional competency in responding to a hurricane.

Summary

There are few research studies examining emergency preparedness or professional competency in any provider type. Most of the work in this area is not reported in the literature and is known only through anecdotal information and preliminary reports at conferences. Further, no systematic examination of the preparedness of health care providers and their response capabilities during the individual phases of a large scale response has been conducted and reported. Evidence of scientific quality regarding emergency preparedness response and professional competency is still lacking. Despite billions of dollars being expended annually, there is a paucity of research that demonstrates that healthcare responders are adequately prepared, that existing emergency preparedness training addresses appropriate professional competency requirements or that training is even effective. No systematic examination of the preparedness of health care providers and their response capabilities during the individual phases of a large scale response has taken place. Because the area of emergency preparedness is new to investigation, there are no known established tools. None of the existing sets of core competencies have been tested for validity to date. As a result, very little is known about what knowledge, skills and abilities are needed in each disaster phase.

Theoretical Framework

Meleis' Transitions Framework

Developed by Chick and Meleis in 1986, the transition model describes the phenomenon of transition which they define as "those periods between fairly stable states" (p. 238) experienced by an individual in "the passage from one life phase, condition or status to another" (p. 239) involving complex person-environment interactions imbedded in the context of the situation. The transition model focuses on the following four major concepts (see Figure 1). The figure depicts how the nature of transitions (types, patterns and properties) as influenced by personal, community and society transition conditions result in patterns of response that can be observed through both process and outcome measures. The model contends that interventions, can be tailored to fit the assessed transition conditions to successfully assist the client to a positive outcome. Items containing an asterisk and bolding are considered for this study.

The transition process begins when a triggering event creates instability and the need for change and the person experiencing first anticipates or is aware of this disruption. During passage, the person in transition must use all of their personal, environmental and interpersonal resources to help them in the change process. Exit occurs when stability has been achieved. In the model, patterns of response are those objective behaviors exhibited by the person experiencing transition and are composed of both process indicators as well as outcome indicators. Process indicators include measures of interpersonal relationships such as the level of feeling to need and stay connected, being situated, how well the person interacts with his or her environment, the ability to develop confidence with a new skill or role and coping. Outcome indicators include measures of mastery of the skill or role needed to manage the transition.

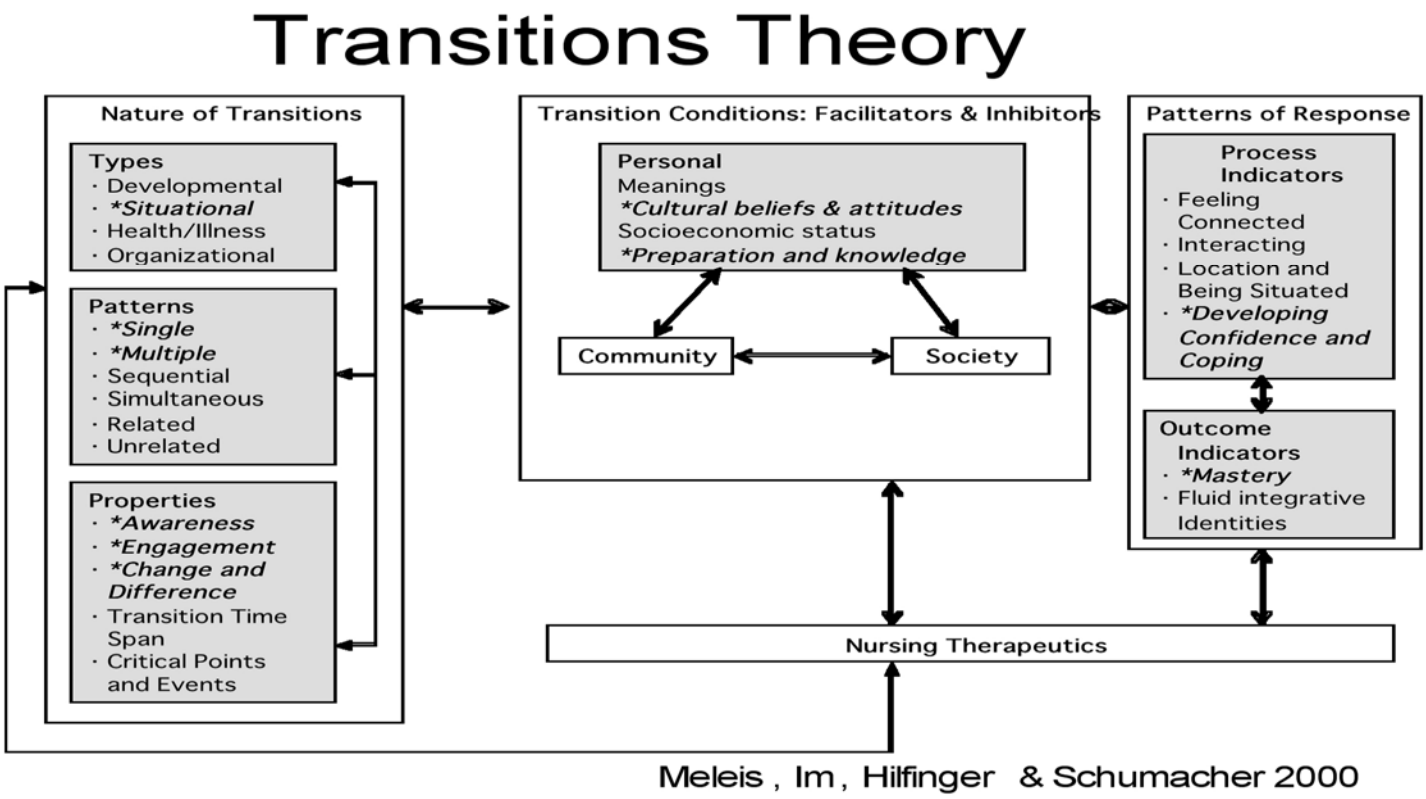
Use in this study

Emergency preparedness and the requirement to respond represent situational and organizational transitions that require the healthcare worker to leave a normal practice situation

of relative knowns—such as known facility, staff, policies, procedures and routines for an environment of unknowns. Standard curricula do not prepare healthcare providers for emergency preparedness and response activities.

Transition conditions influence the outcome by either facilitating or inhibiting a healthy response. Through better understanding of emergency response transition conditions can interventions can be devised and implemented and the level of preparation and knowledge supplemented to facilitate transition movement towards positive patterns of response—the mastery of the skills or roles needed to manage during an emergency response and regain stability and a sense of well-being upon completion

Figure 1: Meleis' Emerging Theory of Transitions.



Haddon's Matrix

Developed in the late 1940s by William Haddon, an early leader in motor vehicle injury prevention, the Haddon Matrix was developed as a multidimensional approach that assists in understanding what factors contribute to outcomes prior to, during and following an event. (Barnett et al., 2005; Haddon, 1972; National Academy of Science, 2004; Runyon, 1998; Runyon, 2003). Because it builds on the traditional epidemiological triad of host, agent and environment within the public health concepts of primary, secondary and tertiary prevention, the model has been used to establish public health interventions and priorities and has been expanded from its initial use to examine the causality of injury, to more recently examine: terrorism (Gofin, 2005); public health planning for pandemics (Barnett et al., 2005); countermeasures (Runyon, 1998); burns (Ytterstand, Smith and Coggan, 1998); and, behavioral health such as mental health response (Wolfe and Tise, n.d.). The model is comprised of three rows that represent the different phases of an incident (pre-event, event and post-event) and four columns representing different influencing or causal factors (host, agent/vehicle, physical environment and social environment). The matrix terminology can be modified to better reflect the question under study. For example, if examining an institution, you might consider focusing on the organizational climate instead of the social environment. In 1998, Runyon further expanded the model to include a third dimension to assist with decision-making. Drawing from the policy analysis field, she included value criteria that can be tailored to the specific question and weighted. Runyon suggested that this additional process allows for a method to quantify and defend decision rationales.

Effective emergency preparedness and response efforts require strategies tailored to the incident phase. By applying Haddon's matrix to emergency response planning and response, the analyst can identify what knowledge, skills and abilities are needed to modify the outcomes in each of these phases. By identifying the competencies needed, one can prescribe the appropriate training necessary to address each factor. Table 1 is an example of how the Haddon Matrix could be used to examine the issue of professional competencies in response to a hurricane. The pre-event, event, and post-event rows of the matrix reflect the phase of the disaster event in which emergency preparedness and response measures can have an effect; however, training for each of these measures must occur in advance in order for the healthcare professional to be efficient and effective (Farmer, 2006). Systematic analysis of professional competencies is the first step in developing education on disasters that could be formalized and evidence-based and could enable evaluation of education and interventions.

Use in this study

Haddon's Matrix targets an entire population of interest, and can be used to intervene with families, communities, systems and individuals. The model recognizes and emphasizes multiple determinants of health and incorporates primary, secondary and tertiary prevention. Use of the public health model allows the entire event to be analyzed, illuminating whether there other factors that can be influenced to produce the desired goal. According to Runyon (2003):

> The models can be used either to understand any public health issue from the perspective of risk factor identification or to devise a diverse array of preventive strategies. In so doing, the model provides both epidemiologist and interventionists a framework within to examine problems systematically and to take action (p. 61).

According to Barnett and others (2005) "Health department leaders can use the Haddon matrix as a planning instrument to dissect the required preparedness and response

requirements for any public health emergency scenario, and then strategize to meet these requirements using a “divide and conquer” approach” (p. 564). His group goes on to say that use of this model can result in costs savings as the model can identify strategies that allow multiple issues to be addressed by one solution, promoting efficient use of public resources. Lett, Kobusingye and Sethi (2002) suggest that the model can be used to design comprehensive and targeted programs, develop policies and promote funding consistent with the size and magnitude of the problem.

Table 1: Application of the Haddon Model In Examining the Issue of Professional Competencies

Phases	Person	Agent/Vehicle	Physical Environment	Social Environment	Decision Criteria
Pre-event	Pre-event training in roles and responsibilities during a natural disaster	Predicted impact of the storm	National stockpiles of emergency equipment for healthcare workers	Receive timely and reliable updated information on disaster response	Feasibility
					Preferences
Event	Trained health care and public health personnel	Storm surge and flooding	Know how to use the stockpiled equipment	Know and use the chain of command	Equity
Post-event	Post-event evaluation of healthcare worker competencies	Water contaminants (eg. sewage, chemical contaminants)	Recommend additions/ deletions for future equipment caches	Recognize the symptoms of Post Traumatic Stress syndrome	Cost-effectiveness

Use of Complimentary Models Provides Synergy

No theoretical model of emergency preparedness exists. To fully understand the phenomena of emergency preparedness it is necessary to consider both the individual—the victim and the responder, as well as the group—the impacted community as well as those from outside that support the response. The integration of two models is helpful to accomplish this. Both models examine events from the context of the person, the environment and society.

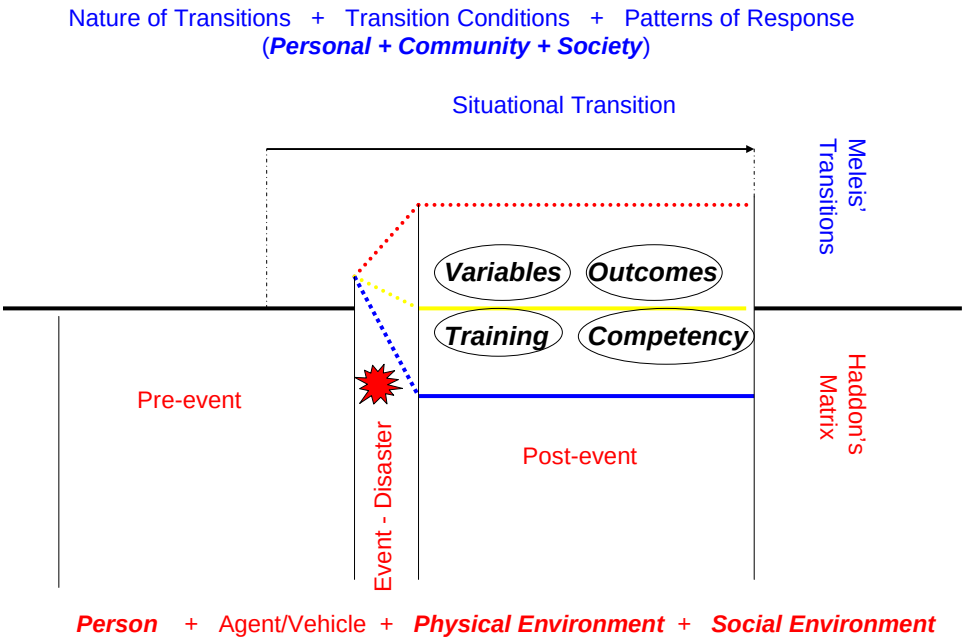
The Meleis' model examines individuals and their responses to an event and can help explicate the process that individuals go through when transitioning from their routine practice to the disaster response. A positive transition is required to master the skill or role needed to manage the transition and regain stability after the transition. The Meleis' model suggested that I look at transitions

- **through the person** by examining beliefs and attitudes,
- **training** through preparation and knowledge,
- **competency** through confidence and coping and
- **outcomes** from the perspective of mastery demonstrated as confidence and competence.

The Haddon's Matrix looks at groups at risk using an epidemiological model that considers pre-event, event and post-event. Use of the model can help explicate where interventions can make a difference in improving the response and where efforts should be expended to support the responder. Haddon's matrix indicated the importance of **identifying the phase of the event**.

The models are complimentary. Both models overlap by addressing the person, the physical (community) environment and the social conditions. The synergy of using both models adds explanatory power to better examine the research questions (Figure 2). Each model supports the variables currently under consideration, which were collected in the Phase I instrument, as well as others to be explored in the future.

Figure 2: Diagram of the Synergy of Using Haddon's Matrix and Meleis' Transition as Conceptual Models.



Study Objectives

Informed by Phase I results, this Phase II study will:

Primary Objectives

1. Describe the characteristics and perceptions of registered nurses (RNs) and medical doctors (MDs) who responded to Hurricanes Katrina and Rita, through the framework of transitions.
2. Assess two specific competencies (**basic clinical care** and **triage**) that were employed during the Katrina and Rita disasters.
3. Explore and describe health care provider readiness to respond.

Secondary Objectives:

1. Identify individual demographic factors that affected the readiness for the specific competencies
2. Identify areas where readiness could be enhanced for future disaster response missions

METHODOLOGY

Overview

This is a two phase study that will assess the effect of competency preparedness on health care providers' sense of readiness for the Hurricane Katrina/Rita disaster.

The objective of **Phase I** of the study was to (1) collect background data from subject matter experts (SMEs) and health care providers who were involved in the Katrina or Rita disaster responses and (2) develop a questionnaire that will be administered via the Internet in Phase II. Human subjects data was collected using structured interview and survey methodology. This pilot study collected a convenience sample of volunteers meeting study inclusion criteria through self-referral and by directly contacting known experts in the field.

Phase I was executed between April and June 2006 and involved data collection at the National Disaster Medical System Conference in Reno, Nevada, on 22-26 April, and the US Public Health Service Professional Conference in Denver, Colorado, on 1 – 6 May. These conferences were ideal as they gather a number of health care providers who met study inclusion criteria. Individual SME interviews were also conducted in person in the National Capital Region and via phone for SMEs located elsewhere. The initial qualitative approach was chosen because little research related to emergency preparedness has been conducted to date.

Phase I results are located in Appendix D.

Research Design: Phase II Procedures

Inclusion Criteria

- Registered Nurse (RNs) or Medical Doctor (MD, DO)
- Worked on-site in a disaster response for either Hurricane Katrina or Rita in Alabama, Louisiana or Mississippi.
- Worked at the disaster site for a minimum of 14 consecutive days (two weeks)
- Age 18 or older

Measures

Phase II Instrument

Phase II data collection will be executed through a web-based questionnaire. The 45-item questionnaire begins by collecting basic demographic information (Items 1 – 25). Information collected includes: highest level of education; number of years of practice; patient populations usually worked with; practice or specialty area; work setting; average hours of practice in the last 2 years; number of previous emergency responses; previous formal emergency response or disaster training; proximity of living situation to the response; dates and number of days at each location during the response; organized response group membership; disaster response site; gender; age; race; ethnicity and preferred method of learning. Responses are "treed" so that nurses see only nursing education, specialties and practice sites and physicians see comparable lists for themselves. Responses use a series of drop down menus to allow the subject to respond quickly with a minimum of key strokes. Responses are designed to be used to compare and contrast information obtained. The dates of hurricane response(s) will be used to calculate which phase or phases of the disaster response the healthcare provider responded in. The last 4 digits of the most frequently used telephone number will be used for data cleaning purposes and will be discarded after data cleaning is accomplished.

Questions 26 – 29 address transition information ranging from before the subject left for the disaster, at the disaster site, before leaving the disaster and after returning home. Using a series of radio buttons that they click, subjects are asked to respond "yes" or "no" to a series of questions and to rate how important that piece of information was to his/her transition. An example of a pre-disaster question is "I knew where I had to go—I had a name and an address of a location".

Questions 30 and 31 address the two competencies under investigation—basic clinical care and triage, competencies performed most frequently by Phase I respondents. Subjects are provided an operational definition of the skill and then asked first if they performed or did not perform the overall skill, again through the use of radio buttons. If either basic clinical care or triage were performed, the subject is provided a series of specific basic clinical care or triage skills and then asked: did they perform that specific skill; how much training in the skill did they have prior to the disaster; and their perceived level of confidence/competence in performing that skill.

Questions 32—33 ask subjects if they performed any of the other competencies identified by Phase I respondents and then to rank order the top five skills performed. When the subject rolls his/her mouse over any of the thirteen additional competencies, they are provided with examples of the competency and asked to indicate whether they performed the skill, how much training had they received prior to the disaster and their perceived confidence/competence in performing the skill, again through the use of radio buttons.

Questions (34 – 35) relate to either observations or experiences while at the disaster site. First subjects are given a list of events and asked if they personally observed them. Then they are given a series of experiences and asked if they had the experience and if they did, how much the experience affected him/her.

Questions 36 – 42 address the return to their previous baseline state. Question 43 specifically asks the respondent to rate how vivid they believe their recall of their disaster response is.

Finally, questions 44 and 45 complete the questionnaire by asking the subjects if there is anything else that they want to tell about their experience through the use of a text box as well as their willingness to participate in future internet-based surveys. If they are will to participate in future studies, they are asked to provide an email address.

The questionnaire is designed to be completed in about an hour. A paper copy of the questionnaire is located in Appendix C.

Data Hosting and Security

The questionnaire will be hosted on a Microsoft 2003 IIS6 webserver, located at Vanderbilt University. Hosting options at Uniformed Services University were explored with technical personnel of the University Information Services at USU. The outcome of these discussions was that technical features required by this survey are not available locally. As an alternative Vanderbilt University, which is the home institution of one of CAPT Slepski's academic advisors, will provide questionnaire coding, hosting and data storage at no charge. In addition, Vanderbilt will provide middleware applications that will allow the Principal Investigator (PI) to instantly access the current dataset at any time as well as assistance in data checks, to ensure the integrity of the data by verifying that responses correctly align with the appropriate columns in the data set.

The questionnaire will be located at: https://nursingapps.nursing.vanderbilt.edu/eppc, The website created for this survey will clearly identify Uniformed Services University as the sponsoring institution and will incorporate a USU logo on the web pages.

Data Analysis

Data will be electronically transferred from the webserver into SPSS data files for analysis through the use of an Excel spreadsheet. Demographic and quantitative information containing descriptive statistics will be summarized in order to profile the sample using: frequencies and simple measures of central tendency (means, medians and modes); variability (standard deviations) for continuous variables; and, percentiles for categorical variables. Independent T tests will be used to examine the differences between RNs and MDs. Multiple regression will be used to examine if work status, area of work, currency, usual place of employment, specialty, number of previous disaster responses, membership in a response group or and/or membership in a response group that requires training is/are predictive of perceived confidence and competence in basic clinical skills and triage.

Specific analyses to be conducted include:

a. Describing and rank ordering **basic clinical care** in terms of:
    - The most frequently reported skills performed;
    - Subjects' perceived level of training (before the response) in the most frequently occurring skills;
    - And, subjects' self-reported level of confidence and competency in performing these skills
b. Comparing and contrasting the most frequently occurring basic clinical care skills performed by RNs and MDs; and
c. Comparing how these two groups (RNs versus MDs) differ in basic clinical care skills in terms of perceived training and perceived confidences and competence;

d. Describing triage in terms of:
    - The most frequently reported skills;
    - Subjects' perceived level of training (before the response) in the competency;
    - Subjects' self-reported level of confidence and competency in performing these skills
e. Comparing how these two groups (RNs versus MDs) differ in triage skills in terms of perceived training and perceived confidence and competence

Limitations of the Study

Use of a convenience sample limits the applicability of this study to the larger population of all emergency preparedness responders. However, the inclusion of two types of providers plus multiple locations of response sites will increase the amount of information obtained and may demonstrate consistent themes to provide a general base for understanding the phenomenon. The Phase II survey will take place approximately 18 months after the event. However, several authors (Hinton Walker, Ricciardi & Griffin Agazio, 2003; Hinton Walker, Garmon & Elberson, 2005) suggest that research focused on disaster situations must often be performed retrospectively to improve care and prevent repeated mistakes.

HUMAN SUBJECTS PROTECTIONS

Recruitment Plan:

Subjects will be recruited through the use of one-time email announcements from one of two sources: (1) self-referral as a part of participation in Phase I of this study; or (2) email announcements posted by organizations that provide information to disaster responders.

Volunteers from Phase I had the option to volunteer to participate in Phase II of this study. Those who so indicated will be contacted directly via email.

The following organizations will be asked to announce this project using an email approved by the IRB (see Appendix C):

- US Public Health Service,
- International Nursing Coalition for Mass Casualty Education
- The Emergency Nurses Association
- National Disaster Medical System
- George Washington University School of Medicine and Health Sciences
- National Organization of Nurse Practitioner Faculties

The recruitment email will outline: the purpose of the study; that the questionnaire is strictly voluntary; that all questionnaire information will be kept confidential; that subjects may decline to answer a question; that subjects may stop at any time; and, that no responses will be associated with the participant or his/her response organization. They will be provided with a URL to access the survey.

Recruitment materials can be found at Appendix C.

Data Security

The Vanderbilt web server used to host the Phase II survey is professionally managed and will host the survey using Secure Sockets Layer (SSL), an encryption protocol that converts responses into a stream of random characters preventing data viewing if data is intercepted "enroute". This encryption protocol is the basis of bank and credit card transactions used in e-commerce. To prevent unintended data loss, the server is patched, virus protected, and backed up to a secure archive on a regular basis.

All documents and electronic files will be securely stored in the office of the Principal Investigator. Electronic documents will be stored on password-protected media. Physical documents containing human subjects information will be kept in a locked storage container in the PI's office.

Reports and Disposition of Data

All data will be reported in the aggregate and all quotes will be attributed to a pseudonym in study publications or presentations. Raw data will be maintained either on the Vanderbilt server or in the custody of the PI. Access to original data will be restricted to the webmaster, PI, supervising faculty, and staff of the USU IRB if requested.

Institutional oversight of human subjects data is exclusively through Uniformed Services University. Data will be institutionally housed in the Graduate School of Nursing, Uniformed Services University. No transfer of human subjects data collected in this study will occur without USU IRB approval.

PERSONNEL AND BUDGET

Personnel

Name	Organization	Role on Project
Slepski, Lynn A., MSN, RN	USUHS GSN	Principal Investigator

A biographical sketch of the principal investigator is provided below.

Academic Advisors

Elberson, Karen, PhD, RN	USUHS GSN	Primary Academic Advisor
Hinton Walker, Patricia, PhD, RN	USUHS GSN	Academic Advisor
Weiner, Betsy, PhD, RN	Vanderbilt University	Academic Advisor

Consultants

Watts, Doreen, PhD, RN	USUHS GSN	Statistical Consultant
Gordon, Jeffry S., PhD	Vanderbilt University	Web Consultant

Budget

The PI's total cost to execute this study including miscellaneous expenses is expected to be less than $2,000.

The PI is the sole member of the study staff. Execution costs will be minimal as the majority of resources required are provided as a part of the PI's normal professional activities. Phase I conference fees and travel costs incurred to interview healthcare providers and conduct focus groups were funded by the PIs home agency, the Department of Homeland Security. The costs of Phase II will be minimal as Vanderbilt University will host the web-based survey at no expense. Any incidental costs will be covered by the PI. The project is not funded, but all resources required for execution are available to the PI.

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PI BIOGRAPHICAL SKETCH

NAME	POSITION TITLE
Lynn A. Slepski, RN, MSN, CCNS	PhD student, Uniformed Services University
eRA COMMONS USER NAME	

EDUCATION/TRAINING *(Begin with baccalaureate or other initial professional education, such as*

INSTITUTION AND LOCATION	DEGREE *(if applicable)*	YEAR(s)	FIELD OF STUDY
Concord Hospital School of Nursing	RN	1976	Nursing
Vermont College of Norwich University	BSN	1985	Nursing
University of Texas Health Science Center at San Antonio	MSN	1988	Nursing

A. Positions

1976 – 1978 ICU and Medical-Surgical Units, Central Vermont Hospital, Barre, VT
1978 – 1980 Director of Nursing, Rowan Court Nursing Home, Barre, VT
1980 – 1981 Nursing Consultant, Washington County Mental Health, Barre, VT
1980 – 1982 Nursing Arts Instructor, Vermont Department of Education, Waterbury, VT
1982 – 1985 Elementary School Nurse, Barre City Schools, Barre, VT
1985 – 1988 Supervisor, Medical Personnel Pool, San Antonio, TX
1988 – 1989 Assistant Head Nurse/Chief Nursing Supervision, Silas B. Hays Army Hospital, Fort Ord, CA
1989 – 1990 Community Health Nurse (CHN), Silas B. Hay Army Hospital, Fort Ord, CA
1990 – 1991 ICU Head Nurse (under wartime conditions), 8th Evacuation Hospital, Dhaharan, Saudi Arabia
1991 – 1992 Community Health Nurse, Silas B. Hay Army Hospital, Fort Ord, CA
1992 – 1994 Chief, Community Health Nursing, 67th Combat Support Hospital, Wuerzburg, Germany
1994 – 1995 Chief, Preventive Medicine, Supreme Headquarters Allied Powers Europe, Belgium
1995 – 1998 CHN/Acting Chief/Regional Consultant, Walter Reed Army Medical Center, Washington, DC
1998 – 2000 Sr. Program Management Consultant, Health Resources Services Administration, Bethesda, MD
2000 – 2002 Medical Readiness Coordinator, Response Specialist, Office of Emergency Preparedness, Rockville, MD
2001 – 2005 Affiliate Faculty, American Heart Association
2002 – 2003 Special Assistant to the Deputy Director for Operations, Center for Biologics Research and Evaluation, Food and Drug Administration, Bethesda, MD
2004 - Adjunct Faculty, Vanderbilt School of Nursing, Nashville, TN
2003 – 2005 Principal Science and Technology (S&/T) Advisor, S&T Directorate, Department of Homeland Security (DHS), Washington, DC
2005 Sr. Public Health Advisor, Department of Homeland Security (Prep), Washington, DC
2007 - Adjunct Faculty, Johns Hopkins, Graduate School of Nursing, Baltimore, MD.

Certifications

Clinical Nurse Specialist in Community Health Nursing (1998-present); Health Promotion Director, Cooper Institute for Aerobics Research (1998 – present); Trauma Nurse, Emergency Nurses Association (1999-present).

Honors and Awards

Civilian

National Disaster Medical System Outstanding Achievement Award (2002); International Who's Who of Professionals (1998); Who's Who in American Nursing (1989); and, Who's Who in Women Executives (1989).

Uniformed Services

US Coast Guard Meritorious Service Medal (January 27, 2006); USPHS Outstanding Service Medal (Nov 13, 2001); Navy Meritorious Service Commendation (Nov 6, 2003); Army Meritorious Service Medal (Jun 14, 1994) with 1st Oak Leaf Cluster (Jul 17, 1998); Joint Meritorious Unit Award (Oct 1, 1998); USPHS Commendation Medal (Feb 24, 2000, with 1st Oak Leaf Cluster (May 2, 2000), with 2nd Oak Leaf Cluster (Aug 14, 2001); Army Commendation Medal (Apri19, 1991) with 1st Oak Leaf Cluster (Feb 18, 1992); USPHS Achievement Medal (Dec 07, 2002); Army Achievement Medal (Mar 4, 1988) with 1st Oak Leaf Cluster (Apr 22, 1990), 2nd Oak Leaf Cluster (Sep 8, 1994), with 3rd Oak Leaf Cluster (Jun 23, 1996); USPHS Outstanding Unit Citation (Nov 13, 2001), with 1st Oak Leaf Cluster (Sep 6, 2002), with 2nd Oak Leaf Cluster (Mar 18, 2003); USPHS Unit Commendation (May 30, 2002), with 1st Oak Leaf Cluster (Jul 05, 2002), with 2nd Oak Leaf Cluster (Mar 26, 2004); Crisis Response Service Award (Jul 23, 1999) with 1st Oak Leaf Cluster (Apr 17, 2000), with 2nd Oak Leaf Cluster (Jan 19, 2001), with 3rd Oak Leaf Cluster (Feb 14, 2002); National Emergency Preparedness Award (Mar 5, 2001); Field Medical Readiness Badge (Dec 22, 1999);Kuwait Liberation (Kuwait) (Oct 1, 1998); Kuwait Liberation (Saudi Arabia) (Oct 1, 1998); Southwest Asia Service Medal (Oct 1, 1998);

B. Selected peer-reviewed publications

1. Slepski, L.A. (2005). Emergency preparedness: Concept development for nursing practice. *Nursing Clinics of North America, 40*(3), 419-430.
2. Slepski, L.A. (2005). Radiation incidents and emergency preparedness. Available at http://www2.nursingspectrum.com/CE/Self-Study_modules/course.html?ID=548.
3. Chafee, M.W., Lavin, R.P., & Slepski, L.A. (2006). Nursing Practice in Homeland Secretary. In P.S. Cowen, S. Moorhead, J.M. Dochterman, & H.K. Grace (Eds.), *Current issues in nursing (7th Ed.*). St. Louis, MO: Mosby.
4. Lavin, R.P., & Slepski, L.A. (In press). Leadership and coordination in disaster health systems: The Federal disaster response network. In T. Goodman-Venema (Ed.), *Disaster Nursing and Emergency Preparedness for Chemical, Biological and Radiological Terrorism and Other Hazards (2nd Ed.).* New York: Springer Publishing.
5. Powers, R., & Slepski, L.A. (In press). EMS Preparedness Strategies for Pandemic Events. *Pre-Hospital and Disaster Medicine.*
6. Kasper, C., Lavin, R.P., & Slepski, L.A. (In press). Subject matter experts: Facts or fiction. *Nursing Forum*.
7. Slepski, L.A., & Lavin, R.P. (In beta testing). Thirty-nine (39) web-based radiation modules. Uniformed Services University of the Health Sciences.

C. Poster Presentations

1. The International Nursing Preparedness Community: Roles. The Commissioned Officers' Association Public Health Professional Conference and Global Health Summit: Helping You Stay Current with the Changing World of Public Health, June 6-7, 2005.
2. Emergency Preparedness—Advancing the State of the Science: From Concept Development to Publication. 2006 US Public Health Professional Conference: Helping You Stay Current with the Changing World of Public Health May 1 – 6 , 2006.
3. Together We Answered the Call—2005. 2006 US Public Health Professional Conference: Helping You Stay Current with the Changing World of Public Health May 1 – 6 , 2006.

APPENDIX A: PHASE II INFORMED CONSENT STATEMENT

The following text will be posted at the beginning of the survey. The subject will electronically affirm understanding of the following informed consent statement by "clicking" a button prior to starting the survey itself. Completion of the survey will serve as an indication of consent to participate in the study.

Informed Consent Information

Research Study

Emergency Preparedness and Professional Competency Among Healthcare Providers During Hurricanes Katrina and Rita: Phase II Interview

INTRODUCTION

You are being asked to take part in a research study. Before you decide to be a part of this research study, we would like to describe the study purpose and procedures to you. Your decision to take part in the study is voluntary. This means that you are free to choose if you will take part in the study.

PURPOSE AND PROCEDURES

The *Uniformed Services University of the Health Sciences* is conducting a study investigating emergency preparedness and professional competency. This study is specifically about the professional skills, knowledge, and abilities needed by healthcare providers who responded to Hurricanes Katrina or Rita. You have been asked to participate in this study because you are either a registered nurse or medical doctor who participated as a health care provider in the response to the hurricane Katrina disaster.

This questionnaire is Phase II of a two part study. The first phase of the study identified health care competencies that were reported to be most important to medical personnel who responded to the Katrina disaster. This second phase of the study will ask detailed questions about these competencies, as well as a variety of questions about your activities as a health care emergency responder during Katrina. Approximately 2,000 people will take part in Phase II of this study. The goal is to use this information to inform future disaster preparation and response.

POSSIBLE BENEFITS AND RISKS

This is a research study and is not designed to provide any benefit to you. It is possible that the results of this study will lead to better understanding of the professional needs of health care

providers who respond to disasters. There are no anticipated risks to you due to participation in this study.

COMPENSATION

You will not be compensated for participation in this study.

PARTICIPATION

Your participation in this study project is voluntary. You may elect to discontinue the questionnaire at any time, or to skip questions that you do not wish to answer.

AMOUNT OF TIME FOR YOU TO COMPLETE THIS STUDY

The total estimated total time required to complete this survey should not exceed one hour.

PRIVACY AND CONFIDENTIALITY

All information you provide as part of this study will be confidential and will be protected to the fullest extent provided by law. Information that you provide and other records related to this study will be accessible to those persons directly involved in conducting this study and members of the Uniformed Services University of the Health Sciences Institutional Review Board (IRB), which provides oversight for protection of human research volunteers. All questionnaires, notes and other materials will be kept in a restricted access areas while not in use. The Principal Investigator will destroy data associated with this study when they are no longer required for data analysis. If you are a military member, please be advised that under Federal Law, a military member's confidentiality cannot be strictly guaranteed.

IF YOU HAVE ADDITIONAL QUESTIONS OR CONCERNS

If you desire additional information about this research study, or if any problems arise related to this study with regard to your rights as a participant, or with regard to any related injury, please contact Principal Investigator, Lynn Slepski, at 202 528-7086 or 800-918-6179, or via the Graduate School of Nursing, Uniformed Services University of the Health Sciences, 4301 Jones Bridge Road, Bethesda, MD 20814-4700. If you have any questions about your rights as a participant in this research study, you may also contact the Office of Research, Uniformed Services University, 4301 Jones Bridge Road, Bethesda, MD 20814, Phone 301-295-3303. If you believe the government or one of the government's employees has injured you, a claim for damages (money) against the federal government (including the military) may be filed under the Federal Torts Claims Act. Information about administrative or judicial avenues of compensation is available from the University's General Counsel at (301) 295-3028.

YOUR CONSENT TO PARTICIPATE

By clicking “I consent to participate” below you are agreeing that you understand the study and that you would like to participate. Please print a copy of this informed consent information sheet for your records.

APPENDIX B: PHASE II SURVEY INSTRUMENT

Demographic Information:

1. Are you a Healthcare Provider? (pull down) (Radio buttons)
   - No (If no…Thank you for participating)
   - Yes

2. Did you respond to Hurricane Katrina or Hurricane Rita? (pull down) (Radio buttons)
   - No (If no…Thank you for participating)
   - Yes

3. How would you describe your healthcare provider role? (Radio buttons) [survey will branch MDs and RNs to separate questions]
   - MD
   - Registered Nurse
   - (Other….Thank you for participating)

4. Highest level of education (Pull down)

RNs

- Diploma
- Post-diploma certificate
- Associate Degree
- Baccalaureate
- Master's degree—nursing
- Master's degree—other
  - Specialty_____
- Practice Doctorate Nursing
- Research Doctorate Nursing
- Doctorate in another field
  - Specialty_____

MDs

- Doctor of Medicine
- Doctor of Medicine/PhD
  - Specialty_____
- Doctor of Osteopathy
- Doctorate in another field
  - Specialty_____

5. Number of years you have practiced as a healthcare provider? (Pull down)

6. What is your work status? (Radio buttons)
   - Full time
   - Part time

7. How would you describe the area where you are employed? (Radio buttons)
   - Rural
   - Suburban
   - Urban

8. The following best describes the type(s) of patient population(s) that I work with (check as many as appropriate) (Check boxes)

Adults
Emergency room
Family practice
General internal medicine
Geriatrics
Intensive/ critical care
Obstetrics/ Gynecology
Operating room
Pediatrics
Surgical care
Other specialty or sub-specialty care
I do not regularly take care of patients

9. My practice area or specialty is: [pick the one that best applies] (Pull down)

RNs		MDs
Administration/ Management		Aerospace Medicine
Anesthesia		Allergy/ Immunology
Cardiology		Anesthesiology
Critical Care (ICU, CCU, SICU)		Cardiovascular Medicine
Educator		Dermatology
Emergency Department		Emergency Medicine
Ethics		Endocrinology
Gerontological Nursing		Family/General Practice
Health Policy		Gastroenterology
HIV/ AIDS Care		Geriatrics
Home Health		Hematology
Hospice		Internal Medicine
Informatics		Medical Genetics
Long-Term Care		Neonatology
Medical/ Surgical		Nephrology
Neonatal		Neurology
Neurology		Nuclear Medicine
Occupational Health		Obstetrics / Gynecology
Oncology		Occupational Medicine
Orthopedics		Oncology
Pediatrics		Ophthalmology
Perinatal		Otorhinolaryngology
Perioperative		Pathology (Anat/ Clinical/ Forensic)
Primary Care		Pediatrics
Psychiatric/ Mental Health		Physical Med. & Rehab.
Rehabilitation		Preventive Medicine
Research		Psychiatry
Women's Health (OB/GYN)		Pulmonary Med.
Other [Text box]		Radiology, Diagnostic
		Radiology, Therapeutic
		Surgery (Gen/ Specialty)
		Urology
		Other [Text Box]

* OB/GYN and surgical specialties combined

10. I work primarily in the following setting: (Pull down)

RNs		MDs
Academia		Academia
Ambulatory Care/ Clinic / HMO		Ambulatory Care/ Clinic
Business/ Corporation		Business/ Corporation
College Health		Fire/ EMS
Fire/ EMS		Free Standing Surgery Center
Free Standing Surgery Center		Government Agency
Government Agency		Health Insurance
Health Insurance		Home Health
Home Health		Hospice
Hospice		Hospital/ Multi-hospital System
Hospital/ Multi-hospital System		Locum Tenens
Locum Tenens		Long Term Care
Long Term Care		Managed Care
Managed Care		Military
Military		Occupational Setting
Occupational Setting		Pre-paid Plan/ HMO
Private Practice		Private Group or Solo Practice
Public Health/ Community Agency		Public Health/ Community Agency
Quality/ Utilization Review		Quality/ Utilization Review
School Health Nurse		Full-time student
Full-time student		Self-Employed
Self-Employed		Other [Text box]
Other [Text box]		Board Certification _____

11. In the last 2 years, on average how many hours per month have you practiced in nursing [medicine]?
_____hours (text)

12. In the last 2 years:

a. On average how many hours per month have you provided direct patient care? ____**hours** (text)

b. On average how many hours per month of education and/ or training have you participated in to maintain your currency? _____ **hours** (text)

13. Before Katrina or Rita, how many other emergency responses had you directly participated in?
_____ responses (Pull down)

14. Before Katrina or Rita, how many days (total) had you been involved in emergency responses _____days (type a number)

15. Before Katrina or Rita had you completed the following training?

IS-100 Basic Incident Command System
IS-200 Advance Incident Command System
IS-700 National Incident Management System (NIMS), An Introduction
IS-800 National Response Plan (NRP), An Introduction

No Yes (Radio buttons)

(If yes.... Month/ Year of training (pull downs)

Was this training helpful to you during your response? (Radio buttons)

No
Yes

16. Before Katrina or Rita, had you received any formal training in disasters or emergency preparedness?

No Yes (If yes...text box opens with a grid)

name of training [insert name]
approximate number of hours [insert hours]
organization providing [insert name]
Required training [pull down yes/ no]
received CE [pull down Yes / No]
Type of training [pull down]

- Computerized distance learning
- Drills or exercises
- Traditional lecture format
- Training through audios or videos
- Videoconferencing
- Written materials

Was this training helpful to you during your response [pull down yes/ no]

17. How many times did you respond to Hurricane Katrina or Hurricane Rita? (Pull down)

1 - 10

Tell me about your FIRST response to Hurricanes Katrina or Rita.
Dates of your FIRST response

From: (Pull down)
- Month
- Day
- Year

To: (Pull down)
- Month
- Day
- Year

Location City [text]
Location State (Pull down)

Was your main role primarily (Radio buttons)

administrative (i.e. administrative, leadership, management)?
Directly providing patient care?

Did you respond as a member of an organized response group? (Radio buttons)

No
Yes (Pull down)

- American Red Cross
- Department of Health and Human Services Volunteer
- Medical Reserve Corps
- Military

National Disaster Medical System
US Public Health Service
Other:_____ [text box]
Does this group requires specific training? Yes/ No (Radio buttons)
I had completed the required specific training Yes/ no (Radio buttons)

18. I worked the longest time at: (Pull down)
    - Air Evacuation site
    - Base camp
    - Command post
    - Health clinic (established)
    - Health clinic (temporary)
    - Medical strike team (mobile assessment team)
    - Self-care shelter established by the Red Cross
    - Self-care shelter established by Health and Human Services (Federal Medical Shelter)
    - Self-care shelter established by a Faith-based organization
    - Self-care shelter established by a established by a city/state government
    - Special needs shelter
    - Staging area
    - Other (text box)

19. My gender is: (Radio buttons)
    - Male
    - Female

20. My age in years is: (Type a number)

21. My race is: (Select the answer that best applies) (Pull down)
    - **American Indian and Alaska Native**
    - **Asian**
    - **Black or African American**
    - **Native Hawaiian and Other Pacific Islander**
    - **White**
    - **American Indian and Alaska Native *and* White**
    - **Asian *and* White**
    - **Black or African American *and* White**
    - **American Indian and Alaska Native *and* Black or African American**
    - **Some other race**

22. My ethnicity is: (Pull down)
    - Hispanic or Latino
    - Not Hispanic or Latino

23. Did you live in the immediate Hurricane Katrina or Hurricane Rita area (within 100 miles)? (Radio buttons)
    - No
    - Yes

24. In rank order, my referred method of learning is: [Place in rank order 1 – 6, with 1 being the most preferred) (Fixed responses 1 – 6, with a corresponding drop down box with choices)

Computerized distance learning
Drills or exercises
Traditional lecture format
Training through audios or videos
Videoconferencing
Written materials

25. The last 4 digits of your most frequently used telephone number XXXX (This number will be used for record comparison only and will be discarded). (Text)

Transition is defined as a passage from one life phase, condition or status to another, between periods of stable states. For the purpose of this study, transition refers to the way people respond to change or adapt to new situations or circumstances during a disaster response in order to incorporate the change event into their lives over time.

26. BEFORE YOU LEFT FOR THE DISASTER, how important was each item to your transition TO your disaster role: (Check box and radio buttons)

			How Important was Each Item Under #26 to Your Transition *TO* Your Disaster Role				
			1	2	3	4	5
✓	26. Before you left for the disaster:		Not Important	Somewhat Important	Moderately Important	Important	Very Important
	I knew where to go (I had a name and an address of a location)?						
	I knew how I was supposed to get there (airline ticket, travel by personal vehicle, travel by government vehicle, ride from the airport, etc.)?						
	I had a specific person to report in to?						
	I was provided with a specific place to check-in upon my arrival at the disaster site?						
	I knew what my role would be?						
	I knew approximately how long I would be gone for?						
	I was told what personal items to take?						
	I was told what professional items to take?						
	I was told what copies of credentials (copies of license, BLS, ACLS, certifications, etc.) to take?						
	I knew what the sleeping arrangements were (a hotel, a building, a tent, availability of a shower, etc.)?						
	I knew what the eating arrangements were (catered meals, Meals Ready-to-Eat (MREs), that I should bring my own food)?						
	I knew what I would be drinking (purified water available, I needed to bring water with me, etc.)?						
	My family or friends had an emergency contact number for me?						
	I had a point of contact(s) for the period that I was traveling to my disaster destination?						

27. AT THE DISASTER SITE WHERE YOU WORKED, how important was each item to your transition TO your disaster role: (Check box and radio buttons)

			How Important was Each Item Under #27 to Your Transition *TO* Your Disaster Role				
			1	2	3	4	5
✓	27. At the disaster site where I worked:		Not Important	Somewhat Important	Moderately Important	Important	Very Important
	I was told what the chain of command was (who was in charge/ who I reported to)?						
	I received a situation briefing (told what was happening) upon my arrival?						
	I was provided with a description of a specific role that I would accomplish?						
	I was introduced to my co-workers?						
	I was provided a code of conduct (professional conduct, no drugs or alcohol used, where to report concerns, etc.)						
	I was provided with a list of acronyms?						
	Someone provided me with an orientation to the physical layout of the organization where I worked?						
	I was told what to do/who to call in an emergency?						
	I was told what the evacuation plan for my area was (where the "rally point" was)?						
	Someone provided me with an orientation to all of the medical equipment in the area where I worked?						
	There was a documentation system (clinical notes) in place						
	Someone provided me with an orientation to documentation that was being used?						
	Someone provided me with an orientation to communication equipment in the area where I worked?						
	I was provided with a list of contacts for other work areas?						
	There were policies/ procedures in place?						
	Someone oriented me to the policies and procedures that were in place?						
	I was told how to protect myself?						
	I was told what my work shift was?						
	I knew who my supervisor was at all times?						
	I was told what the levels of my decision-making authorities were?						
	I knew where the next higher referral location for the next level of care was?						
	I was told about equipment/supply levels (how much was on hand, when the next delivery was expected)?						

27. AT THE DISASTER SITE WHERE YOU WORKED, how important was each item to your transition TO your disaster role: (Continued) (Check box and radio buttons)

			How Important was Each Item Under #27 to Your Transition *TO* Your Disaster Role				
			1	2	3	4	5
✓	27. At the disaster site where I worked:		Not Important	Somewhat Important	Moderately Important	Important	Very Important
	I was told how equipment/supplies were ordered?						
	I was told about safety procedures?						
	I was provided with Personal Protective Equipment (PPE) (masks, goggles, etc.)						
	I was instructed on how to use PPE?						
	I received a daily update of new information?						
	There was always someone available to answer a question or show me something that I did not know or felt uncomfortable doing by myself?						

My supervisor was responsible for an average of _____ people (Drop down 1 – 25, > 25)

I was a supervisor (Radio buttons) Yes No
If Yes How many people did you supervise? (Drop down 1 -25, > 25)

			How Important was Each Item Under #27 to Your Transition *TO* Your Disaster Role				
			1	2	3	4	5
✓	27. At the disaster site where I worked:		Not Important	Somewhat Important	Moderately Important	Important	Very Important
	I kept a daily log of personnel						
	I kept a daily log of assignments						
	I kept a daily log of events						

28. BEFORE LEAVING THE DISASTER SITE, how important was each item to your transition TO your disaster role: (Check box and radio buttons)

			How Important was Each Item Under #28 to Your Transition *TO* Your Disaster Role				
			1	2	3	4	5
✓	28. Before leaving the disaster site:		Not Important	Somewhat Important	Moderately Important	Important	Very Important
	I briefed my replacement?						
	I briefed my supervisor?						
	I returned issued equipment?						
	I completed check-out procedures?						
	I provided follow-up contact information for myself?						
	I was provided with a point of contact for questions or concerns?						
	I had a chance to talk about what had happened with others (sometimes called a debriefing)?						

29. AFTER RETURNING HOME, how important was each item to your transition TO your disaster role: (Check box and radio buttons)

			How Important was Each Item Under #27 to Your Transition *TO* Your Disaster Role				
			1	2	3	4	5
✓	29. After returning home:		Not Important	Somewhat Important	Moderately Important	Important	Very Important
	I notified the people that deployed me that I had arrived home safely?						
	The organization that I deployed with asked me for my input about what had happened (sometimes called an after action report)?						
	I completed an after action report?						

Basic clinical care is defined as those clinical interventions undertaken to stabilize and maintain a patient. For the purpose of this study, basic clinical care does NOT include medication dispensing or immunization, resuscitation (emergency care, Basic Life Support, Advance Cardiac Life Support, a resuscitative action, acute care, critical care or intensive care) or wound care (care related to wound care or dressings, care of puncture wounds or sutures). You will be asked a series of questions: if you performed a specific skill, how much training you have received in the specific skill and your level of confidence in performing the skill in this environment. Answer the perceived level of confidence question as if you were completing this statement...."I felt...[insert your response] competence/competent performing in this situation". (Check box for performance and radio buttons)

30. Overall basic clinical care I Did NOT Perform ☐ I Performed ☐ If skill was not performed, skips to question 31.

	Check if you performed this on site	Amount of Training PRIOR to this response			Perceived Level of Confidence				
		1	2	3	1	2	3	4	5
		None	Some	Extensive	No	Limited	Some	Moderate	Very
Assessment and follow-up	✓								
Clinically assessed lung sounds									
Manually counted respirations									
Interpreted lab results									
Obtained a medical history									
Ordered diagnostic scan									
Ordered laboratory test									
Ordered a medical procedure/treatment									
Ordered X-Ray									
Performed a physical exam									
Took a blood pressure with a manual blood pressure cuff									
Took an oral temperature (mercury thermometer)									
Took an rectal temperature (mercury thermometer)									
Took an auxiliary temperature (mercury thermometer)									

	Check if you performed this on site	Amount of Training PRIOR to this response			Perceived Level of Confidence				
		1	2	3	1	2	3	4	5
		None	Some	Extensive	No	Limited	Some	Moderate	Very
Documentation	✓								
Document allergies									
Document initial assessment									
Document medication administration									
Document next of kin									
Document past medical history									
Document previously prescribed medications									
Document provided clinical care									
Document treatment administration									
Use a triage tag									
Use a patient log									
Hydration									
Performed “the pinch test”									
Provided oral hydration using water									
Provided oral hydration using a commercially prepared oral hydration (electrolyte) solution or preparation (i.e. Pedialyte™)									
Provided oral hydration using a manually prepared oral hydration solution or preparation									
Informally monitored hydration status									
Formally monitored hydration status-recorded input									
Formally monitored hydration status-recorded output									
Manually managed an in-place intravenous (counted drops-macro chamber)									
Manually managed an in-place intravenous (counted drops-micro chamber)									

	Check if you performed this on site	Amount of Training PRIOR to this response			Perceived Level of Confidence				
		1	2	3	1	2	3	4	5
		None	Some	Extensive	No	Limited	Some	Moderate	Very
Hydration (continued)	✓								
Manually managed an in-place intravenous (counted drops using a Burretrol™ chamber to avoid fluid overload)									
Managed an in-place intravenous using an IV pump									
Managed a device									
Abdominal drain (tube with a collection device)									
Cast									
Cervical collar									
Chest tube with a one-way valve									
Chest tube with a pleurovac									
Colostomy									
Nasogastric tube									
Penrose drain									
Sling									
Splint									
Trachea tube									
Traction									
Urinary catheter external (Texas catheter)									
Urinary catheter internal (indwelling device)									
Urinary collection bag (pediatric)									
Procedures									
Applied a cast									
Applied a cervical collar									
Applied a sling									
Applied a splint									
Applied traction									
Drew blood									

	Check if you performed this on site	Amount of Training PRIOR to this response			Perceived Level of Confidence				
		1	2	3	1	2	3	4	5
		None	Some	Extensive	No	Limited	Some	Moderate	Very
Procedures (continued)	✓								
Eye irrigation									
Inserted an internal urinary catheter									
Inserted a nasogastric tube									
Inserted a oral-pharyngeal airway									
Provided O_2 by nasal cannula									
Provided O_2 by mask									
Provided a nebulizer treatment									
Suctioned a patient									
Used tank oxygen									
Wound irrigation									
Provided patient education									
Cast care									
Sling care									
Splint care									
Signs/symptoms of dehydration									
Signs/symptoms of infection									
Use of crutches									
When to return for follow-up or treatment									
Provided physical care									
Provided a bed bath (partial or full)									
Provided skin care									
Provided a shower									
Provided nutrition through a gastrostomy tube									
Scrubbed an injury to clean it									
Soaked an injury to clean it									
Turned a patient according to a routine									
Provided post-mortem care									

	Check if you performed this on site	Amount of Training PRIOR to this response			Perceived Level of Confidence				
		1	2	3	1	2	3	4	5
		None	Some	Extensive	No	Limited	Some	Moderate	Very
Provided mental health support	✓								
Provided active listening									
Held a hand or "gave a hug"									
Provided recommendations									
Referred the patient to another resource									
Used technology									
Took a blood pressure with an automatic blood pressure cuff (B/P only)									
Took a temperature with a ear (aural) thermometer									
Took a temperature with an automatic thermometer									
Took a temperature with skin scanning (thermo-scanning) device									
Took vital signs with an automatic machine									
Used a "bench top" or "bedside" pregnancy test									
Used a "bench top" or "bedside" strep throat test									
Used a "bench top" or "bedside" urinalysis (dip stick or strips)									
Used a "bench top" or "bedside" urinalysis (machine)									
Used a 12-lead EKG machine									
Used a 3 or 4 lead cardiac monitor									
Used a glucometer									
Used a pulse oximeter									
Used an I-Stat™ (field deployable, hand-held blood chemistry lab device)									
Used an O_2 concentrator									

	Check if you performed this on site	Amount of Training PRIOR to this response			Perceived Level of Confidence				
		1	2	3	1	2	3	4	5
		None	Some	Extensive	No	Limited	Some	Moderate	Very
Discharge planning/ social assistance	✓								
Personally coordinated resources for the patient									
Provided translation services (patient other than English as a first language)									
Referred the patient to another resource (support services)									
Reported a communicable disease									
Wrote a medical referral for follow-up									

Triage is defined as the medical screening of two or more patients to determine their relative priority for treatment. In a mass casualty situation, triage involves a brief assessment. As a result of the evaluation, patients are placed in one of four categories: immediate; delayed; minor; or, dead/dying. During a disaster, triage can be performed at any place where victims are located with little or no equipment, and usually involves a primary assessment as well as multiple secondary assessments based on the severity of the patient's injuries and the resources that are available. Answer the perceived level of confidence question as if you were completing this statement...."I felt...[insert your response] competence/competent performing in this situation". (Check box for performance and radio buttons)

31. Triage I Did NOT Perform ☐ I Performed ☐ If skill was not performed, skips to question 32.

	Check if you performed this on site	Amount of Training PRIOR to this response			Perceived Level of Confidence				
		1	2	3	1	2	3	4	5
		None	Some	Extensive	No	Limited	Some	Moderate	Very
Triage	✓								
Infants-medical emergencies									
Infants-injuries or trauma									
Children-medical emergencies									
Children-injuries or trauma									
Adults-medical emergencies									
Adults-injuries or trauma									
Geriatrics-medical emergencies									
Geriatric-injuries or trauma									

32. Did you perform any of the following? (If subject rolls over the skill, the examples come up. Then selects using radio buttons)

			Amount of Training PRIOR to this response			Perceived Level of Confidence				
			1	2	3	1	2	3	4	5
	Examples of this skill	Check if you performed this on site ✓	None	Some	Extensive	No	Limited	Some	Moderate	Very
Administration	Filled a command, leadership, management, negotiation, organization, organizing, oversight or planning or supervision role; filled an administrative position; or filled an administrative function—completed paperwork, developed policy, procedures or wrote reports									
Assessment	Performed an assessment function—individual (presenting medical illness)									
Immunizations	Administered immunizations or vaccines to individuals									
Liaison	Conducted community outreach or coordination functions; or acted as a liaison to a governmental or non-governmental body (State liaison, American Red Cross or faith-based organization)									

			Level of Training you had PRIOR to the response			Perceived Level of Confidence				
			1	2	3	1	2	3		5
	Examples of this skill	I Performed	No Training	Some Training	Extensive Training	Not at all Competent	Limited Competence	Somewhat Competent	Moderate Level of Competence	Very Competent
Logistics	Inventoried, ordered, stored or dispensed resources or supplies									
Medication Dispensing	Dispensed medication by any route (PO, IM, SC, etc.)									
Mental Health	Provided counseling, crisis intervention or psychological support									
Needs Assessment	Conducted a community assessment or needs assessment (public health or critical infrastructure sector—i.e. water and sanitation)									
Pharmacology	Refilled and/ or dispensed medication, conducted a medication assessment or review, or prescription writing									
Respiratory Care	Provided breathing, respiratory management or respiratory treatment									
Resuscitation	Provided CPR, BLS, ACLS, or handled medical emergencies; performed a resuscitation action (fluid resuscitation); or provided critical care or intensive care									

			Level of Training you had PRIOR to the response			Perceived Level of Confidence				
			1	2	3	1	2	3		5
	Examples of this skill	I Performed	No Training	Some Training	Extensive Training	Not at all Competent	Limited Competence	Somewhat Competent	Moderate Level of Competence	Very Competent
Special Needs	Worked in a special needs shelter or provided care to a population deemed "special needs"									
Wound Care	Performed an I & D; provided infection care, took care of a puncture wound, sutured or dressed a wound									

33. Based on your experience, rank the top 5 skills that you performed (1 being the skill that you performed most frequently)
(Fixed list of responses 1 – 5, with corresponding drop down boxes for choices.)

Pick list

Administration
Assessment
Basic Clinical Skills
Immunizations
Liaison
Logistics
Medication Dispensing
Mental Health
Needs Assessment
Pharmacology
Respiratory Care
Resuscitation
Special Needs
Triage
Wound Care
[text]

34. During my disaster experience I observed: **(no yes I would prefer not to answer)** **(Radio buttons)**

Discrimination
Physical assault
Sexual assault
Sexual harassment
Use of alcohol
Use of illegal drugs

35. The following is a list of experiences that may affect people emotionally. After reflecting on your personal response experience, please indicate how you currently feel about each of the experiences listed under #35. If you did not experience the event, please select "NO – Did not experience this event." If you did experience the event, please rate the extent to which this experience affected you. **(Radio buttons)**

At the disaster site where I worked I had the following experience:	Did Not Occur	This Experience Affected Me To...				
		1	2	3	4	5
		No Extent	Some Extent	A Moderate Extent	A Great Extent	An Extreme Extent
Being in an accident						
Being attacked/ ambushed						
Being rushed by a crowd						
Being threatened by a disaster victim						
Being shot at						
Being robbed						
Seeing the physical devastation						
Seeing dead bodies or body parts						
Handling or uncovering dead bodies or body parts						
Smelling the stench of decomposing bodies						
Witnessing an accident which resulted in serious injury or death						
Witnessing hostility between disaster victims						
Seeing seriously injured disaster victims						
Having to aid in the removal of hazardous materials						
Working in areas where there was high crime or civil unrest						
Riding through areas where there was high crime or civil unrest						
Having hostile reactions from disaster victims you were trying to help						

At the disaster site where I worked I had the following experience:	Did Not Occur	This Experience Affected me to...				
		1	2	3	4	5
		No Extent	Some Extent	A Moderate Extent	A Great Extent	An Extreme Extent
Having grateful reactions from disaster victims you were trying to help						
Disarming (removing weapons) from disaster victims						
Having contact with traumatized disaster victims						
Having to exercise restraint while working with disaster victims						
Witnessing hostility over property disputes						
Seeing children who were disaster victims						
Needing to police or manage disaster victims in chaotic or unpredictable conditions						
Feeling "unsafe"						

36. Since returning, have you talked with someone about your experiences during your disaster response? (Radio buttons)

No

Yes If yes, please indicate with whom you talked. Check all that apply (Check boxes)

- Spouse/ Partner
- Family member
- Friend
- Someone else who responded with you
- Supervisor
- Co-worker
- Your healthcare provider
- Mental health professional
- Religious leader

Other

37. Please rate to what extent were you able to return to your previous (pre-disaster response) health provider roles and responsibilities? (Radio buttons)

Not at all—I work outside of healthcare
Not at all—I am no longer in healthcare
Not at all—I have retired
A few of my roles and responsibilities
Half of my roles and responsibilities
Most of my roles and responsibilities
All of my roles and responsibilities
I have a different job in healthcare—fewer responsibilities
I have a different job in healthcare—more responsibilities
Other [Text box]

38. In your opinion, have you returned to your pre-response "baseline" state of feeling stable or normal baseline? (Radio buttons)

Yes [go to question 39]
No--I had no change in my baseline [skip question 39]
No [skip question 39]

39. How long did it take before you returned to your pre-response "baseline" state of feeling stable or normal? (Pull downs)

_____ days
_____ weeks
_____ months
_____ years

40. In reflecting back on this disaster response overall, my response was a positive experience? (Radio buttons)

Strongly disagree
Disagree
Neutral
Agree
Strongly agree

41. In reflecting back on this disaster response overall, my response was a satisfying experience? (Radio buttons)

Strongly disagree
Disagree
Neutral
Agree
Strongly agree

42. Without hesitation, I would volunteer for a disaster response again? (Radio buttons)

Strongly disagree
Disagree
Neutral
Agree
Strongly agree

43. I reflecting back on this disaster response, I believe that my ability to recall events is…? (Radio buttons)

Very vivid—like it happened yesterday
Vivid--I can remember most events exactly, I can't remember or mix up the names of people or places
Somewhat vivid—I can remember about 50% of the events exactly & mix up the remaining events, names of people or places
Not so clear—I can remember a few events exactly and get others mixed up
I can't remember the events, people or places well at all

44. Is there anything else you want to tell us about your experience?

No
Yes [Text Field]

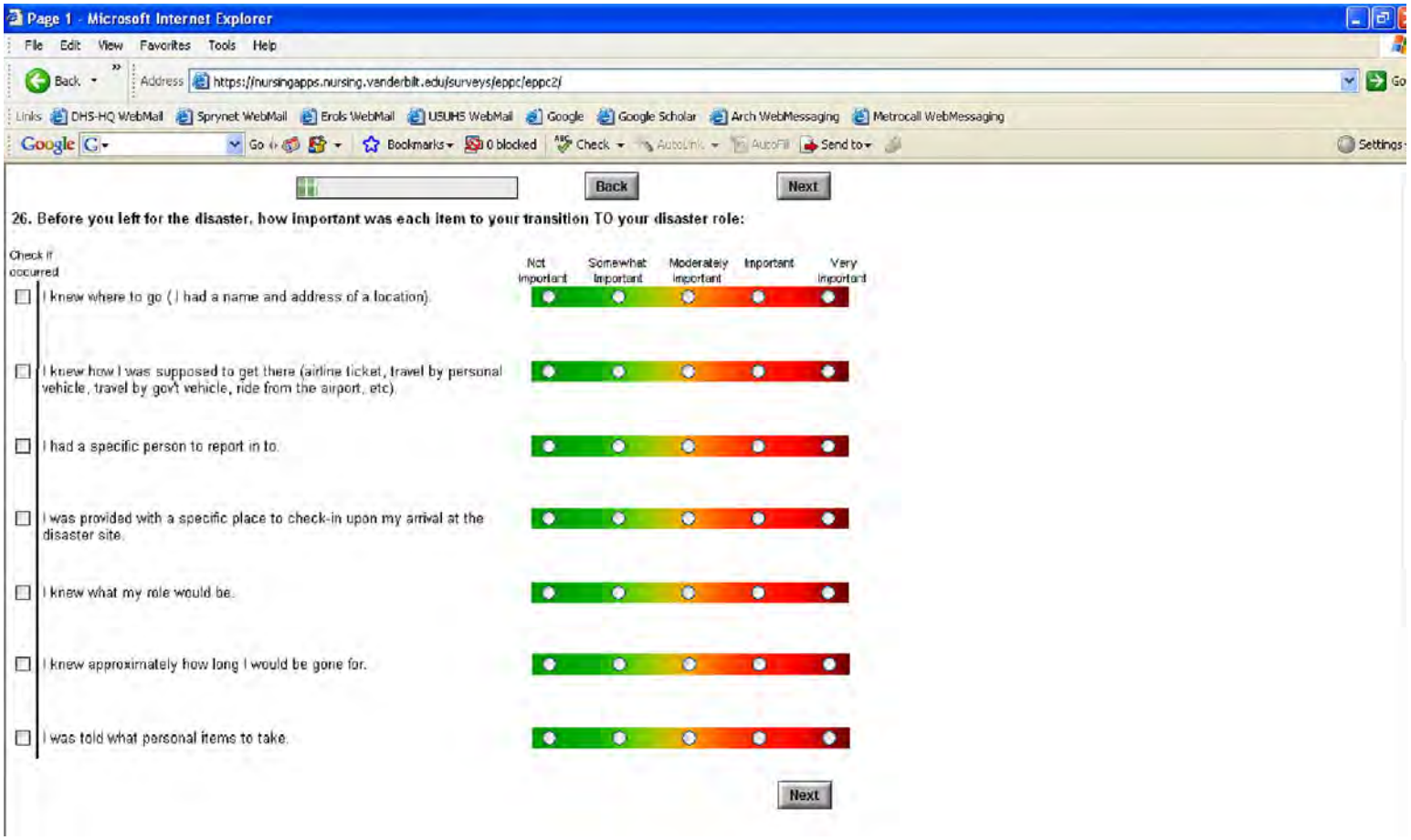
45. If you would like to participate in a follow-up survey or interview, put in your email address so we may contact you:

Thank you for participating. You responses are important and will be kept confidential. Nothing that you have indicated will be attributed to either you as an individual or your organization. Please feel free to pass the URL to this site to others that you feel may be interested in responding.

https://nursingapps.nursing.vanderbilt.edu/epp

[Submit]

Sample Web Pages




Page 1 - Microsoft Internet Explorer
File Edit View Favorites Tools Help
Back
Address https://nursingapps.nursing.vanderbilt.edu/surveys/eppc/eppc3b/
Go
Links DHS HQ WebMail Sprynet WebMail Ercis WebMail USUHS WebMail Google Google Scholar Arch WebMessaging Metrocall WebMessaging
Google
Go
Bookmarks
0 blocked
Check
Send to
Settings
30. Overall basic clinical care, cont'd
Back
Next
Check if you performed this on site.
Amount of Training prior to this response
Perceived Level of Confidence
Provided physical care
None Some Extensive None Limited Some Moderate Very
Provided a bed bath (partial or full)
Provided skin care
Provided a shower
Provided nutrition through a gastrostomy tube
Scrubbed an injury to clean it
Soaked an injury to clean it
Turned a patient according to a routine
Provided post-mortem care
Provided mental health support
Provided active listening
Next

APPENDIX C: RECRUITMENT MATERIALS

Email for Organizations to forward to prospective subjects:

Dear _____:

I am seeking your support in obtaining registered nurse and medical doctor volunteers to complete a web-based questionnaire examining ***Emergency Preparedness and Professional Competency Among Healthcare Providers During Hurricanes Katrina and Rita***. Your organization was directly involved in sending health care providers who had a variety of experiences. I am requesting that you forward the email below to physicians and nurses in your organization who responded to the hurricane Katrina or Rita disasters.

The questionnaire for this scientific study is web-based. Potential subjects will be provided with a URL location. After reading and acknowledging an informed consent, they will asked to answer a series of questions using drop down boxes, radio buttons and short text entries. The questionnaire is designed to be answered in about 60 minutes.

This study is sponsored by the Uniformed Services University and is part of the completion of my doctoral research program. All individual responses are confidential. The combined results may be used for the development of policy, training curriculum, exercise programs, and/or publications in the scientific literature.

Please assist me in locating potential volunteers for this study!

Thank you.

Lynn A. Slepski, RN, MSN, CCNS
Email: Lynn.Slepski@dhs.gov
Desk: (202) 282-9697
Cell: (202) 528-7086
Pager (800) 918-6179

Email for potential subjects:

Dear _____:

I am seeking your help in a research study entitled ***Emergency Preparedness and Professional Competency Among Healthcare Providers During Hurricanes Katrina and Rita***. If you are a physician or nurse who deployed in support of Hurricane Katrina or Rita for at least fourteen consecutive days (2 weeks), I would like to invite to you complete a questionnaire addressing your experiences and two medical competency areas that have been identified as important in disaster emergency response.

This study is sponsored by the Uniformed Services University and is part of the completion of my doctoral research program. The study has been approved by the Institutional Review Board at Uniformed Services University, which is responsible for approving all research involving human subjects. *All individual responses are confidential.* The combined results may be used for the development of policy, training curriculum, exercise programs, and/or publications in the scientific literature.

The questionnaire for this study is web-based and located at

https://nursingapps.nursing.vanderbilt.edu/eppc

If you are interested in completing this questionnaire please visit this page. You will be asked to review a short description of the project and informed consent statement. The questionnaire itself is 100% web based and is composed of a series of questions using drop down boxes, radio buttons and short text entries. The questionnaire is designed to be answered in about 60 minutes.

If you have any questions please do not hesitate to contact me. Thank you in advance for considering participating in this research.

Thank you.

Lynn A. Slepski, RN, MSN, CCNS
Email: Lynn.Slepski@dhs.gov
Desk: (202) 282-9697
Cell: (202) 528-7086
Pager (800) 918-6179

APPENDIX D: PHASE I RESULTS

Slepski conducted an Institutional Review Board (IRB)-approved Phase I exploratory pilot study of emergency preparedness and professional competency among health care providers during Hurricanes Katrina and Rita over the period of April – June 2006. She interviewed 15 healthcare responders, 8 subject matter experts and examined the survey responses of an additional 200 healthcare providers who deployed in support of the hurricanes. In response to an anonymous survey, participants answered three questions. They were: (1) asked to name the 3 response skills (competencies) performed with the greatest regularity; (2) after reflecting back to the hurricane experience and all of the issues encountered, to list 3 areas where the respondent felt the least prepared to respond; and (3) to list three things to tell or recommend to someone preparing to respond to a similar disaster.

Slepski found that registered nurses (37%) and then physicians (24%) were the largest categories of respondents. Basic clinical care (39%) and triage (26%) were the two most frequent response skills reported.

Table 1: Response by Provider Type (Slepski, Unpublished Pilot)

Provider Type	Frequency	Percent
***Medical Doctor**	**47**	**23.5**
Physician's Assistant	10	5
***Registered Nurse**	**73**	**36.5**
Nurse Practitioner/ Advance Practice Nurse	17	8.5
Licensed Vocational Nurse/ Licensed Practical Nurse	3	1.5
EMT/ Paramedic	20	10
Dentist	6	3
Other (ex. Pharmacist, Clinical Psychologist, Medical Social Worker or Mental Health Worker)	24	12

Table 2: Competency by Provider Type (only Healthcare Providers) (Slepski, Unpublished Pilot)

	Provider Type							Total
Competency	**MD**	PA	NP/ APN	**RN**	LVN/ LPN	EMT/ Paramedic	Dentist	
Admin	20	2	7	28	3	7	4	71
Air Evacuation	2			1				3
Assessment	7	3	7	20		4		41
Basic Clinical Care	**29**	6	13	**23**	2	7	1	**81**
Communications	2			3			1	6
DMORT Support							7	7
Education				4		1		5
Epidemiology	9							9
Immunizations	1		3	13	1	3		21
Liaison			1	11		1	1	14
Logistics		1	1	6	1	5	1	15
Med Admin			1	6				7
Mental Health	8	1		7	1	2	1	20
Needs Assessment	1	1		4				6
Patient Transport								
Pharmacology	4	2	2	3				11
Preventive Med	2					1		3
Respiratory Care	1			4		1		6
Resuscitation	6	1	2	14		3		26
Safety				1		3		4
Site Set Up		1		1			1	3
Special Needs	3		1	2	1			7
Triage	**13**	2	4	**26**		5	1	**51**
Wound Care	7	1	3	10		6		27
Other	12	2	2	12		6		34
Total # Competencies By provider type	17	2	13	21	6	15	9	

When asked to list the 3 areas where the respondent felt least prepared, responses could be grouped into the following categories: expectations (what they thought/didn't think would happen); organization (how things were organized/fit together); resources; scope (how large the event became); specific skills; systems issues (not knowing role/who partners were/ how to replace supplies/lack of communication and information), and other. Two comments addressed the amount of devastation and the incredible loss. Only 22% of respondents reported that they didn't

know a specific skill. Rather what responders described was an **abrupt change or transition from their every day practice worlds**. They described a period of acclimation where they needed to learn about the people, physical and social environments around them. One respondent describe the process as “getting to know the lay of the land” and “operating with a whole new set of ‘rules’”.

Table 3: Reported Areas Where Respondents Felt Least Prepared (Slepski, Unpublished pilot)

N=476	Person	Physical Environment	Social Environment
Expectation N=31	▪ Work hours 24/7 Long hours No breaks ▪ Waiting around ▪ Doing clerical work ▪ Lack of sleep ▪ Rotating shifts	▪ Being sent into an unsafe situation ▪ Severe danger	▪ Hostile public contact ▪ Only medical provider for 500 patients ▪ Chaos ▪ Bureaucracy
Organization N=34			▪ Organization Incident Command System (8) ▪ Management Command Team ▪ Chain of command (8) ▪ Federal/state/local interface
Personal N=19	▪ Didn't know what to bring (7) ▪ Notifying employer ▪ Measures to avoid becoming a victim ▪ Not bringing personal professional equipment		▪ Not knowing team ▪ Communicating w/ and providing support to my family
Resources N=38	▪ Not having the right clothing to wear	▪ Lack of: Food/ Clean water Equipment Medications ▪ Patient transportation out	▪ Lack of discharge planning ▪ Identifying remaining community resources
Scope N=31	▪ Working with Affected children Affected elderly ▪ Critical care requirements	▪ Storage of deceased ▪ Smell of death	▪ Mental health issues (15) ▪ Major trauma ▪ Mass care/volumes of care ▪ Number of dead
Skill N=103	▪ Ventilator care ▪ Casting ▪ Suturing ▪ How to use PPE ▪ IV access/ therapy ▪ Patient specialties (Pediatric, OB/Gyn, COPD) ▪ How to "make do" without equipment ▪ Specific equipment O2 concentrator 5 brands of glucose monitors	▪ Putting up a tent ▪ Food/galley inspections ▪ Environmental assessments ▪ Setting up a shelter	▪ Speaking w/ grieving families ▪ Emotional needs of people ▪ Community assessments ▪ Keeping families together
System Issues N=114	▪ Lack of "team" ▪ Not knowing deployment role before they left	▪ Lack of communication (phones down) ▪ Safety/Security issues ▪ Poor living conditions	▪ Lack of current situation/information ▪ How to replace supplies ▪ Who partner organizations were ▪ Getting partners to work well together ▪ "inefficient medical providers" ▪ Lack of interpreters ▪ Wrong provider skill mix ▪ Formulary wasn't large enough- providers weren't familiar w/ drugs ▪ Lack of mental health resources ▪ No standard documentation
Other N=5			▪ Responding to questions from victims for which there was no answer ▪ What happened after I returned home

Finally, when asked to provide recommendations for future responders, responses grouped as follows:

Table 4: Recommendations for Future Responders (Slepski, Unpublished pilot)

Category of Response	Number Total=495	Examples of responses
Attributes or Attitudes	N=105	Included the term "flexible" i.e. "be flexible" (59) Be patient Have a sense of humor
What to Pack	N=66	Have a pack list to remember everything Bring moleskin Bring your own food and water Equipment for the worse case/austere environment
Personal Preparedness	N=115	Prepare yourself mentally to deal with austere conditions Prepare my family for their hardships. Sign medical power for kids Find out as much as you can about where you are going/doing Be ready for anything-be prepared to work in a different role
Self-care	N=26	Make sure you eat and keep hydrated Prioritize work/rest periods for yourself and subordinates
System Issues	N=60	Small library of medical references Standardized forms and reports/ report schedules Protocols and SOPs
Training	N=123	Drill and exercise (9) Non-medical topics—environmental health issues/ ICS/ NRP (19) Field experience—low/no technology (4) Get specific training (15) ACLS (4) Basic skills (1) First aid (2) Suturing (1) Triage (5) Wound care (2)

Of note, only 25% (N=123) of the respondents recommending training, of which 3% (N=15) actually recommended a specific type of training such as ACLS or triage. Rather, respondents recommended **actions that improved them personally or as a member of their team or larger response group**.

UNIFORMED SERVICES UNIVERSITY OF THE HEALTH SCIENCES
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BETHESDA, MARYLAND 20814-4712
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March 12, 2007

MEMORANDUM FOR CAPT LYNN SLEPSKI, RN, MSN, CCNS, GRADUATE SCHOOL OF NURSING

SUBJECT: Uniformed Services University Institutional Review Board Continuation Approval (DoD Assurance No. P60001 and FWA No. 00001628) of HU61GR for Human Subject Participation

Your no more than minimal risk research protocol HU61GR entitled, "***Emergency Preparedness and Professional Competency Among Health Care Providers During Hurricanes Katrina and Rita***," was reviewed and approved for continuation on March 12, 2007 by Edmund G. Howe, M.D., J.D., Chairperson, Institutional Review Board, under the provisions of 32 CFR 219.110(b)(1)Suppl. F(7). **This approval expires on March 11, 2008.** This approval will be reported to the full Uniformed Services University IRB scheduled to meet on April 12, 2007.

This is a two phase study that will assess the effect of competency preparedness on health care providers' sense of readiness for the Hurricane Katrina/Rita disaster.

This action is both a continuing review and approval to begin Phase II.

Authorization to conduct this protocol will automatically terminate on March 11, 2008. If you plan to continue data collection or analysis beyond this date IRB approval for continuation is required. Please submit a USU Form 3204A/B (application for continuing approval) to the Office of Research by **January 11, 2008**. Though we will attempt to assist you by sending you a reminder, submission of an application for continuation is your responsibility. *Please note the termination date and the date for submission of your USU Form 3204 in your calendar!*

You are required to submit amendments to this protocol, changes to the informed consent document (if applicable), adverse event reports, and other information pertinent to human research for this project to this office for review. No changes to this protocol may be implemented prior to IRB approval. If you have questions regarding specific issues on your protocol, or questions of a more general nature concerning human participation in research, please contact me at 301-295-0814 or lgiberman@usuhs.mil.

Laura Giberman
Laura Giberman
Institutional Review Board Coordinator

cc: Director, Research Development Office
Chair, GSN
REA
File

Amendment 1

REA Date Stamp

USUHS FORM 3204
RESEARCH INVOLVING HUMAN SUBJECTS
(new or modification/addendum)

Protocol No.: HU61GR

Principal Investigator: Lynn Slepski

Department: GSN **Phone** (202) 282-9697

Pager or Other

E-Mail: lslepski@usuhs.mil **Phone Number** (202) 528-7086

Project Title: Emergency Preparedness and Professional Competency Among Health Care Providers During Hurricanes Katrina and Rita

PLEASE PROVIDE RESPONSES TO THE FOLLOWING:

1. New protocol or **X** Modification/Addendum

2. Indicate the pages of proposal specifically applicable to the involvement or enrollment of volunteers, private information, or human-derived products.
   Pages: 64

3. Check procedure(s) to be used:
   - _____ Use of genetic testing or DNA analysis.
   - _____ Use of blood or blood products: ( ) Blood Draw ( ) Blood Bank ( ) Other
   - _____ Use of human tissue and/or bodily fluids including excreta and external secretions (sweat, saliva, amniotic fluid at the time of rupture of membrane).
   - _____ Hair and/or nail clippings.
   - _____ Teeth and/or dental material including plaque and calculus.
   - _____ Prospective collection and use of donated, pathological and/or diagnostic specimens. **(Refer to question 15)**
   - _____ Use of existing pathological and/or diagnostic specimens.
     - From where are these specimens being obtained?
     - Can the subjects from whom these specimens were obtained be identified directly or by the use of encoded identifiers?
       ( ) Yes ( ) No **(Refer to question 15)**
   - _____ Use of human cell lines: ( ) Primary ( ) Immortalized
   - _____ Moderate exercise by healthy volunteers.
   - _____ Recording of data using noninvasive procedures used in clinical practice.
     - Identify:
   - _____ Study of existing data, documents, and/or records.
     - From where are these data being obtained?
     - Can the subjects from whom these data were obtained be identified directly or by the use of encoded identifiers?
       ( ) Yes ( ) No

__X__ Survey, interview, or educational (cognitive, diagnostic, aptitude, achievement) test or procedures or observation of public behavior.

- Can the subjects be identified directly or by identifiers?
  () Yes (**X**) No
- Do the data collected involve sensitive information (e.g., drug and alcohol use, sexual practices, child or spousal abuse, or other information that could be criminal or damaging to one's financial or social standing, employability, insurability, or psychological well-being)?
  ( ) Yes (**X**) No

_____ Use of normal educational practices in accepted educational settings such as instructional strategies, effectiveness of or comparison among instructional techniques, curricula or classroom management methods.

_____ Use of taste and food quality evaluation and consumer acceptance studies?

4. Indicate the age and sex as well as the physical and psychiatric condition of the volunteers to be enrolled.
   Age: **18 or older**
   Gender: **males and females**

Participants who meet the following criteria will be selected for inclusion in the study:

Health Care Providers

1. **Healthcare professional [MD/DO and RN]**
2. **Worked on-site in a disaster response for either Hurricane Katrina or Rita in Alabama, Louisiana or Mississippi.**
3. **Worked at the disaster site for a minimum of 14 consecutive days (two weeks)**
4. **Age 18 or older**

5. Indicate the total number and rate of enrollment of volunteers.
   Total number: **4233** (entire project)
   Rate: **233/Phase I: Apr-May 2007 (COMPLETED)** (#/ time period)
   4000/Phase II: Mar 2007 – Mar 2008 (#/ time period)

6. If applicable, explain with a compelling rationale the exclusion or under representation of one gender and/or minorities from the subject population.
   NA

7. Explain the inclusion of any vulnerable population (e.g., children, pregnant women, prisoners, cognitively impaired persons) and why that population is being studied.
   NA

8. State how physical and psychiatric condition will be determined and by whom.
   No health assessment will be performed as part of this study.

9. If normal volunteers are to be enrolled, state how this will be determined.
Not applicable. Volunteers will be working health care professionals.

10. Describe the status of the volunteers relative to the principal investigator and/or USUHS (e.g., patient at Walter Reed, active duty, students, civilian employees, etc.)
No relationship to the PI or USUHS. It is possible that some volunteers may know the PI through other professional work or by reputation due to her position in the Department of Homeland Security.

11. Describe the status of the volunteer's Attending Physician to the project including his or her role in safeguarding the rights of the volunteer.
Not applicable

12. Identify the specific procedures, issues, and/or experimental drug administration involving the volunteers that are important for the IRB to consider. Describe possible risks, ethical issues, and/or side effects for each. Factors to consider including, but are not limited to, the following:

    A. What is the volunteer being asked to do which they would not be doing unless part of this research project?

In Phase II of this study participants will be asked to complete a web-based questionnaire. No direct identifiers will be collected as part of the core survey. Subjects may elect to volunteer for future studies in this area by providing an email address at the conclusion of the survey.
For persons with slow internet connection methods, after completing the web based informed consent, the respondent can select to download a paper-based survey that can be completed by hand and mailed to the PI at the USU/ GSN. Envelopes will be discarded upon receipt by the GSN, precluding identification of the respondent. Respondents desiring payment for postage can select a separate piece of paper to provide their return address and will be reimbursed $2.00 (postage approximately $1.65)

Procedures for Protecting Against Risks: Before inclusion in the study, participants will be informed of the potential risks associated with this study.	
Intervention/ Data Collection	**Potential Risk**
Phase II	
Demographic Questionnaire	**NONE:** No direct identifiers will be collected. No potential risks are associated with the questionnaire. Participants may skip any question without penalty. Failure to complete any question will remove that participant from the sample being compared.
Survey Instrument	**NONE:** No potential risks are associated with this test. Participants may refuse to complete the test or fail to meet the cut score. Refusal or failure to meet the cut score will result in those participants being excluded from the study.
Volunteer for follow-up research (optional)	**LOW**: Subjects will be provided the opportunity to volunteer for future research conducted by the PI. If the subject elects to do so, a direct identifier in the form of an email address will be collected. These emails will extracted from the survey data and not be associated with the subject's survey responses,

	but do provide a record of individuals who participated in the study.

B. Does the research collect personally sensitive information (e.g., drug and alcohol use, sexual practices, child abuse)? If so, how is confidentially protected?

No

C. Does the research involve deception of the subject? If so, how is the subject debriefed after completion of the project?

No

13. If this study involves the administration of drugs not approved by the FDA, state how approval will be obtained.

NA

14. Do any of the investigators have an equity or consultative relationship with a non-USUHS source related to this protocol which might be considered to be a conflict of interest? (If yes, please include a statement of disclosure.)

No

15. Unless otherwise contained in your protocol, if using prospectively collected tissue, or any tissue linked to subject/patient identifiers, indicate:

A. How, where, and for how long will tissue/samples be stored?

NA

B. Will patient data that can or will be linked to the tissue/samples be collected?

NA

C. Will linkage to subjects be maintained or will samples be delinked?

NA

D. Will any tissue/samples be left over at the end of the study and if so, what will be done with the tissue/samples?

NA

16. Describe fully the modification(s) to your existing protocol to include rationale, procedures, numbers of subjects, etc. (Use blank pages if additional space is required.)

A revised protocol is attached.

I have read and will comply with USUHS Instruction 3201, *"The Use of Human Volunteers in Research at the Uniformed Services University of the Health Sciences,"* March 1999.

I have read, understood, and will comply with the tenets contained in the Belmont Report ("Ethical Principles and Guidelines for the Protection of Human Subjects of Research," The National Commission for the Protection of

Human Subjects of Biomedical and Behavioral Research, April 18, 1979. URL: http://ohrp.osophs.dhhs.gov/humansubjects/guidance/belmont.htm).

Lynne A. Slupski
Principal Investigator (signature)

July 13, 2007
Date

Directions for this section. Please:

1. Circle the response that best fits your answer.
2. Where there is a line, write in a response.
3. Where there is a box, place a check in the best response.

Demographic Information:

1. Are you a Healthcare Provider? (Circle)

Yes
No If no…Please stop…..Thank you for participating

2. Did you respond to Hurricane Katrina or Hurricane Rita? (Circle)

Yes
No If no…Please stop….Thank you for participating

3. Would you describe your healthcare provider role as: (Circle)

MD
Registered Nurse
(Other….Please stop….Thank you for participating)

4. What is your highest level of education? (Circle)

RNs
Diploma
Post-diploma certificate
Associate Degree
Baccalaureate
Master's degree—nursing
Master's degree—other
Specialty_____
Practice Doctorate Nursing
Research Doctorate Nursing
Doctorate in another field
Specialty_____

MDs
Doctor of Medicine
Doctor of Medicine/PhD
Specialty_____
Doctor of Osteopathy
Doctorate in another field
Specialty_____

5. Number of years you have practiced as a healthcare provider? _____ years (Fill in the blank)

6. Do you usually work: (Circle)

Full time
Part time

7. Would you describe the area where you are employed as: (Circle)

Rural
Suburban
Urban

8. The following best describes the type(s) of patient population(s) that I work with [check as many as appropriate]

✓	
	Adults
	Emergency room
	Family practice
	General internal medicine
	Geriatrics
	Intensive/ critical care
	Obstetrics/ Gynecology
	Operating room
	Pediatrics
	Surgical care
	Other specialty or sub-specialty care
	I do not regularly take care of patients

9. My practice area or specialty is: [check the one that best applies]

✓	RNs
	Administration/ Management
	Anesthesia
	Cardiology
	Critical Care (ICU, CCU, SICU)
	Educator
	Emergency Department
	Ethics
	Gerontological Nursing
	Health Policy
	HIV/ AIDS Care
	Home Health
	Hospice
	Informatics
	Long-Term Care
	Medical/ Surgical
	Neonatal
	Neurology
	Occupational Health
	Oncology
	Orthopedics
	Pediatrics
	Perinatal
	Perioperative
	Primary Care
	Psychiatric/ Mental Health
	Rehabilitation
	Research
	Women's Health (OB/GYN)

Other_____

✓	MDs
	Aerospace Medicine
	Allergy/ Immunology
	Anesthesiology
	Cardiovascular Medicine
	Dermatology
	Emergency Medicine
	Endocrinology
	Family/General Practice
	Gastroenterology
	Geriatrics
	Hematology
	Internal Medicine
	Medical Genetics
	Neonatology
	Nephrology
	Neurology
	Nuclear Medicine
	Obstetrics / Gynecology* (combined)
	Occupational Medicine
	Oncology
	Ophthalmology
	Otorhinolaryngology
	Pathology (Anat/ Clinical/ Forensic)
	Pediatrics
	Physical Med. & Rehab.
	Preventive Medicine
	Psychiatry
	Pulmonary Med.
	Radiology, Diagnostic
	Radiology, Therapeutic
	Surgery (Gen/ Specialty)
	Urology

Other_____

10. I work primarily in the following setting: [check the best one that applies]

RNs

✓	
	Academia
	Ambulatory Care/ Clinic / HMO
	Business/ Corporation
	College Health
	Fire/ EMS
	Free Standing Surgery Center
	Government Agency
	Health Insurance
	Home Health
	Hospice
	Hospital/ Multi-hospital System
	Locum Tenens
	Long Term Care
	Managed Care
	Military
	Occupational Setting
	Private Practice
	Public Health/ Community Agency
	Quality/ Utilization Review
	School Health Nurse
	Full-time student
	Self-Employed

Other_____

MDs

✓	
	Academia
	Ambulatory Care/ Clinic
	Business/ Corporation
	Fire/ EMS
	Free Standing Surgery Center
	Government Agency
	Health Insurance
	Home Health
	Hospice
	Hospital/ Multi-hospital System
	Locum Tenens
	Long Term Care
	Managed Care
	Military
	Occupational Setting
	Pre-paid Plan/ HMO
	Private Group or Solo Practice
	Public Health/ Community Agency
	Quality/ Utilization Review
	Full-time student
	Self-Employed

Other_____
Board Certification _____

11. In the last 2 years, on average how many hours per month have you practiced in your field? _____hours (fill in)

12. In the last 2 years: **(fill in the blanks)**

a. On average how many hours per month have you provided direct patient care? ____**hours**

b. On average how many hours per month of education and/ or training have you participated in to maintain your currency? _____ **hours**

13. Before Katrina or Rita, how many other emergency responses had you directly participated in? _____ responses

14. Before Katrina or Rita, how many days total had you been involved in emergency responses? _____days

15. Before Katrina or Rita had you completed the following training? [If you check yes, please provide the month and year of training and check whether the training was helpful].

Training	No ✓	Yes ✓	Month/ year of training	Was Training Helpful?	
				No ✓	Yes ✓
IS-100 Basic Incident Command System					
IS-200 Advance Incident Command System					
IS-700 National Incident Management System (NIMS), An Introduction					
IS-800 National Response Plan (NRP), An Introduction					

16. Before Katrina or Rita, had you received any formal training in disasters or emergency preparedness? (Circle)

No

Yes (If yes, list one example)

Name of training_____[name of training]

Approximate number of hours? _____hours

Organization providing the training?_____ [insert name]

Was the training required? (Circle) Yes No

Did you received CE for the training? (Circle) Yes No

Type of training (Circle)

Computerized distance learning

Drills or exercises

Traditional lecture format

Training through audios or videos

Videoconferencing

Written materials

Was this training helpful to you during your response? (Circle) Yes No

17. How many times did you respond to Hurricane Katrina or Hurricane Rita? _____ times (fill in)

17a. Tell me about your FIRST response to Hurricanes Katrina or Rita.

Dates of your FIRST response (Fill in the blanks)

Start date of first response _____Month

_____Day

_____Year

End date of first response _____Month

_____Day

_____Year

Location: _____ City

Location: _____ State

17b. Was your main role mainly…. (Circle)

Administrative (i.e. administrative, leadership, management)?

Directly providing patient care?

17c. Did you respond as a member of an organized response group? (Circle)

No (….skip to #18)

Yes (If yes, pick the organized group)

American Red Cross

Department of Health and Human Services Volunteer

Medical Reserve Corps

Military

National Disaster Medical System

US Public Health Service

Other:_____ [fill in the name]

17d. Does this group requires specific training? (Circle) Yes No

17e. I had completed the required specific training? (Circle) Yes No

18. I worked the longest time at: (Circle)

Air Evacuation site

Base camp

Command post

Health clinic (established)

Health clinic (temporary)

Medical strike team (mobile assessment team)

Self-care shelter established by the Red Cross

Self-care shelter established by Health and Human Services (Federal Medical Shelter)

Self-care shelter established by a Faith-based organization

Self-care shelter established by a city/state government

Special needs shelter

Staging area

Other _____(fill in)

19. Your gender is: (Circle)

Male

Female

20. Your age in years is: _____years (fill in)

21. Your race: (Circle all that apply)

Alaska Native

American Indian

Asian

Black/ African American

Caucasian/ White

Native Hawaiian or Pacific Islander

Other_____ (fill in)

22. Your ethnicity is: (Circle)

Hispanic or Latino

Not Hispanic or Latino

23. Did you live in the immediate Hurricane Katrina or Hurricane Rita area (within 100 miles)? (Circle)

No

Yes

24. Rank order, my referred method of learning is: (Place in rank order 1 – 6, with 1 being the most preferred)

	1-6
Computerized distance learning	
Drills or exercises	
Traditional lecture format	
Training through audios or videos	
Videoconferencing	
Written materials	

Transition is defined as a passage from one life phase, condition or status to another, between periods of stable states. For the purpose of this study, transition refers to the way people respond to change or adapt to new situations or circumstances during a disaster response in order to incorporate the change event into their lives over time.

26. BEFORE YOU LEFT FOR THE DISASTER, how important was each item to your transition TO your disaster role: (Check the box if it happened, then rate how important each item was to you).

		How Important was Each Item Under #26 to Your Transition *TO* Your Disaster Role				
		1	2	3	4	5
26. Before you left for the disaster:	This happened To me ✓	Not Important	Somewhat Important	Moderately Important	Important	Very Important
I knew where to go (I had a name and an address of a location)?						
I knew how I was supposed to get there (airline ticket, travel by personal vehicle, travel by government vehicle, ride from the airport, etc.)?						
I had a specific person to report in to?						
I was provided with a specific place to check-in upon my arrival at the disaster site?						
I knew what my role would be?						
I knew approximately how long I would be gone for?						
I was told what personal items to take?						
I was told what professional items to take?						
I was told what copies of credentials (copies of license, BLS, ACLS, certifications, etc.) to take?						
I knew what the sleeping arrangements were (a hotel, a building, a tent, availability of a shower, etc.)?						
I knew what the eating arrangements were (catered meals, Meals Ready-to-Eat (MREs), that I should bring my own food)?						
I knew what I would be drinking (purified water available, I needed to bring water with me, etc.)?						
My family or friends had an emergency contact number for me?						
I had a point of contact(s) for the period that I was traveling to my disaster destination?						

27. AT THE DISASTER SITE WHERE YOU WORKED, how important was each item to your transition TO your disaster role: (Check the box if it happened, then rate how important each item was to you).

		How Important was Each Item Under #27 to Your Transition *TO* Your Disaster Role				
		1	2	3	4	5
27. At the disaster site where I worked:	This happened To me ✓	Not Important	Somewhat Important	Moderately Important	Important	Very Important
I was told what the chain of command was (who was in charge/ who I reported to)?						
I received a situation briefing (told what was happening) upon my arrival?						
I was provided with a description of a specific role that I would accomplish?						
I was introduced to my co-workers?						
I was provided a code of conduct (professional conduct, no drugs or alcohol used, where to report concerns, etc.)						
I was provided with a list of acronyms?						
Someone provided me with an orientation to the physical layout of the organization where I worked?						
I was told what to do/who to call in an emergency?						
I was told what the evacuation plan for my area was (where the "rally point" was)?						
Someone provided me with an orientation to all of the medical equipment in the area where I worked?						
There was a documentation system (clinical notes) in place						
Someone provided me with an orientation to documentation that was being used?						
Someone provided me with an orientation to communication equipment in the area where I worked?						
I was provided with a list of contacts for other work areas?						
There were policies/ procedures in place?						
Someone oriented me to the policies and procedures that were in place?						
I was told how to protect myself?						
I was told what my work shift was?						
I knew who my supervisor was at all times?						
I was told what the levels of my decision-making authorities were?						
I knew where the next higher referral location for the next level of care was?						
I was told about equipment/supply levels (how much was on hand, when the next delivery was expected)?						

27. AT THE DISASTER SITE WHERE YOU WORKED, how important was each item to your transition TO your disaster role: (Check the box if it happened, then rate how important each item was to you).

		How Important was Each Item Under #27 to Your Transition *TO* Your Disaster Role				
		1	2	3	4	5
27. At the disaster site where I worked:	This happened To me ✓	Not Important	Somewhat Important	Moderately Important	Important	Very Important
I was told how equipment/supplies were ordered?						
I was told about safety procedures?						
I was provided with Personal Protective Equipment (PPE) (masks, goggles, etc.)						
I was instructed on how to use PPE?						
I received a daily update of new information?						
There was always someone available to answer a question or show me something that I did not know or felt uncomfortable doing by myself?						

My supervisor was responsible for an average of _____ people (fill in)

I was a supervisor (Circle) Yes No

If Yes How many people did you supervise? _____ people

(Check the box if it happened, then rate how important each item was to you).

		How Important was Each Item Under #27 to Your Transition *TO* Your Disaster Role				
		1	2	3	4	5
27. At the disaster site where I worked:	This happened To me ✓	Not Important	Somewhat Important	Moderately Important	Important	Very Important
I kept a daily log of personnel						
I kept a daily log of assignments						
I kept a daily log of events						

28. BEFORE LEAVING THE DISASTER SITE, how important was each item to your transition TO your disaster role: (Check the box if it happened, then rate how important each item was to you).

		How Important was Each Item Under #28 to Your Transition *TO* Your Disaster Role				
		1	2	3	4	5
28. Before leaving the disaster site:	This happened To me ✓	Not Important	Somewhat Important	Moderately Important	Important	Very Important
I briefed my replacement?						
I briefed my supervisor?						
I returned issued equipment?						
I completed check-out procedures?						
I provided follow-up contact information for myself?						
I was provided with a point of contact for questions or concerns?						
I had a chance to talk about what had happened with others (sometimes called a debriefing)?						

29. AFTER RETURNING HOME, how important was each item to your transition TO your disaster role: (Check the box if it happened, then rate how important each item was to you)**.**

		How Important was Each Item Under #27 to Your Transition *TO* Your Disaster Role				
		1	2	3	4	5
29. After returning home:	This happened To me ✓	Not Important	Somewhat Important	Moderately Important	Important	Very Important
I notified the people that deployed me that I had arrived safely home?						
The organization that I deployed with asked me for my input about what had happened (sometimes called an after action report)?						
I completed an after action report?						

Basic clinical care is defined as those clinical interventions undertaken to stabilize and maintain a patient. For the purpose of this study, basic clinical care does NOT include medication dispensing or immunization, resuscitation (emergency care, Basic Life Support, Advance Cardiac Life Support, a resuscitative action, acute care, critical care or intensive care) or wound care (care related to wound care or dressings, care of puncture wounds or sutures). You will be asked a series of questions: if you performed a specific skill, how much training you have received in the specific skill and your level of confidence in performing the skill in this environment. Answer the perceived level of confidence question as if you were completing this statement...."I felt...[insert your response] competence/competent performing in this situation". **(Check the box if you performed the skill then how much training you had PRIOR to the response and finally how confident you felt in performing the skill).**

30. Overall basic clinical care I Performed ☐ I Did Not Perform..... ☐ IF SKILL WAS NOT PERFORMED, SKIP TO QUESTION 31.

	Check if you performed this on site	Amount of Training PRIOR to this response			Perceived Level of Confidence				
		1	2	3	1	2	3	4	5
		None	Some	Extensive	No	Limited	Some	Moderate	Very
Assessment and follow-up	✓								
Clinically assessed lung sounds									
Manually counted respirations									
Interpreted lab results									
Obtained a medical history									
Ordered diagnostic scan									
Ordered laboratory test									
Ordered a medical procedure/treatment									
Ordered X-Ray									
Performed a physical exam									
Took a blood pressure with a manual blood pressure cuff									
Took an oral temperature (mercury thermometer)									
Took an rectal temperature (mercury thermometer)									
Took an auxiliary temperature (mercury thermometer)									

(Check the box if you performed the skill then how much training you had PRIOR to the response and finally how confident you felt in performing the skill).

	Check if you performed this on site	Amount of Training PRIOR to this response			Perceived Level of Confidence				
		1	2	3	1	2	3	4	5
		None	Some	Extensive	No	Limited	Some	Moderate	Very
Documentation	✓								
Document allergies									
Document initial assessment									
Document medication administration									
Document next of kin									
Document past medical history									
Document previously prescribed medications									
Document provided clinical care									
Document treatment administration									
Use a triage tag									
Use a patient log									
Hydration									
Performed “the pinch test”									
Provided oral hydration using water									
Provided oral hydration using a commercially prepared oral hydration (electrolyte) solution or preparation (i.e. Pedialyte™)									
Provided oral hydration using a manually prepared oral hydration solution or preparation									
Informally monitored hydration status									
Formally monitored hydration status-recorded input									
Formally monitored hydration status-recorded output									
Manually managed an in-place intravenous (counted drops-macro chamber)									
Manually managed an in-place intravenous (counted drops-micro chamber)									

(Check the box if you performed the skill then how much training you had PRIOR to the response and finally how confident you felt in performing the skill).

	Check if you performed this on site	Amount of Training PRIOR to this response			Perceived Level of Confidence				
		1	2	3	1	2	3	4	5
		None	Some	Extensive	No	Limited	Some	Moderate	Very
Hydration (continued)	✓								
Manually managed an in-place intravenous (counted drops using a Burretrol™ chamber to avoid fluid overload)									
Managed an in-place intravenous using an IV pump									
Managed a device									
Abdominal drain (tube with a collection device)									
Cast									
Cervical collar									
Chest tube with a one-way valve									
Chest tube with a pleurovac									
Colostomy									
Nasogastric tube									
Penrose drain									
Sling									
Splint									
Trachea tube									
Traction									
Urinary catheter external (Texas catheter)									
Urinary catheter internal (indwelling device)									
Urinary collection bag (pediatric)									
Procedures									
Applied a cast									
Applied a cervical collar									
Applied a sling									
Applied a splint									
Applied traction									

(Check the box if you performed the skill then how much training you had PRIOR to the response and finally how confident you felt in performing the skill).

	Check if you performed this on site	Amount of Training PRIOR to this response			Perceived Level of Confidence				
		1	2	3	1	2	3	4	5
		None	Some	Extensive	No	Limited	Some	Moderate	Very
Procedures (continued)	✓								
Drew blood									
Eye irrigation									
Inserted an internal urinary catheter									
Inserted a nasogastric tube									
Inserted a oral-pharyngeal airway									
Provided O_2 by nasal cannula									
Provided O_2 by mask									
Provided a nebulizer treatment									
Suctioned a patient									
Used tank oxygen									
Wound irrigation									
Provided patient education									
Cast care									
Sling care									
Splint care									
Signs/symptoms of dehydration									
Signs/symptoms of infection									
Use of crutches									
When to return for follow-up or treatment									
Provided physical care									
Provided a bed bath (partial or full)									
Provided skin care									
Provided a shower									
Provided nutrition through a gastrostomy tube									
Scrubbed an injury to clean it									
Soaked an injury to clean it									

(Check the box if you performed the skill then how much training you had PRIOR to the response and finally how confident you felt in performing the skill).

	Check if you performed this on site	Amount of Training PRIOR to this response			Perceived Level of Confidence				
		1	2	3	1	2	3	4	5
		None	Some	Extensive	No	Limited	Some	Moderate	Very
Provided physical care (continued)									
Turned a patient according to a routine									
Provided post-mortem care									
Provided mental health support	✓								
Provided active listening									
Held a hand or "gave a hug"									
Provided recommendations									
Referred the patient to another resource									
Used technology									
Took a blood pressure with an automatic blood pressure cuff (B/P only)									
Took a temperature with a ear (aural) thermometer									
Took a temperature with an automatic thermometer									
Took a temperature with skin scanning (thermo-scanning) device									
Took vital signs with an automatic machine									
Used a "bench top" or "bedside" pregnancy test									
Used a "bench top" or "bedside" strep throat test									
Used a "bench top" or "bedside" urinalysis (dip stick or strips)									
Used a "bench top" or "bedside" urinalysis (machine)									
Used a 12-lead EKG machine									
Used a 3 or 4 lead cardiac monitor									
Used a glucometer									
Used a pulse oximeter									
Used an I-Stat™ (field deployable, hand-held blood chemistry lab device)									
Used an O_2 concentrator									

(Check the box if you performed the skill then how much training you had PRIOR to the response and finally how confident you felt in performing the skill).

	Check if you performed this on site	Amount of Training PRIOR to this response			Perceived Level of Confidence				
		1	2	3	1	2	3	4	5
		None	Some	Extensive	No	Limited	Some	Moderate	Very
Discharge planning/ social assistance	✓								
Personally coordinated resources for the patient									
Provided translation services (patient other than English as a first language)									
Referred the patient to another resource (support services)									
Reported a communicable disease									
Wrote a medical referral for follow-up									

Triage is defined as the medical screening of two or more patients to determine their relative priority for treatment. In a mass casualty situation, triage involves a brief assessment. As a result of the evaluation, patients are placed in one of four categories: immediate; delayed; minor; or, dead/dying. During a disaster, triage can be performed at any place where victims are located with little or no equipment, and usually involves a primary assessment as well as multiple secondary assessments based on the severity of the patient's injuries and the resources that are available. Answer the perceived level of confidence question as if you were completing this statement...."I felt...[insert your response] competence/competent performing in this situation". **(Check the box if you performed the skill then how much training you had PRIOR to the response and finally how confident you felt in performing the skill).**

31. Triage I Performed ☐ I Did NOT Perform ☐ IF SKILL WAS NOT PERFORMED, SKIP TO QUESTION 32.

	Check if you performed this on site	Amount of Training PRIOR to this response			Perceived Level of Confidence				
		1	2	3	1	2	3	4	5
		None	Some	Extensive	No	Limited	Some	Moderate	Very
Triage	✓								
Infants-medical emergencies									
Infants-injuries or trauma									
Children-medical emergencies									
Children-injuries or trauma									
Adults-medical emergencies									
Adults-injuries or trauma									
Geriatrics-medical emergencies									
Geriatric-injuries or trauma									

32. Did you perform any of the following? **(Check the box if you performed the skill then how much training you had PRIOR to the response and finally how confident you felt in performing the skill).**

			Amount of Training PRIOR to this response			Perceived Level of Confidence				
			1	2	3	1	2	3	4	5
	Examples of this skill	Check if you performed this on site ✓	None	Some	Extensive	No	Limited	Some	Moderate	Very
Administration	Filled a command, leadership, management, negotiation, organization, organizing, oversight or planning or supervision role; filled an administrative position; or filled an administrative function—completed paperwork, developed policy, procedures or wrote reports									
Assessment	Performed an assessment function—individual (presenting medical illness)									
Immunizations	Administered immunizations or vaccines to individuals									
Liaison	Conducted community outreach or coordination functions; or acted as a liaison to a governmental or non-governmental body (State liaison, American Red Cross or faith-based organization)									

(Check the box if you performed the skill then how much training you had PRIOR to the response and finally how confident you felt in performing the skill).

			Level of Training you had PRIOR to the response			Perceived Level of Confidence				
			1	2	3	1	2	3		5
	Examples of this skill	I Performed	No Training	Some Training	Extensive Training	Not at all Competent	Limited Competence	Somewhat Competent	Moderate Level of Competence	Very Competent
Logistics	Inventoried, ordered, stored or dispensed resources or supplies									
Medication Dispensing	Dispensed medication by any route (PO, IM, SC, etc.)									
Mental Health	Provided counseling, crisis intervention or psychological support									
Needs Assessment	Conducted a community assessment or needs assessment (public health or critical infrastructure sector—i.e. water and sanitation)									
Pharmacology	Refilled and/ or dispensed medication, conducted a medication assessment or review, or prescription writing									
Respiratory Care	Provided breathing, respiratory management or respiratory treatment									
Resuscitation	Provided CPR, BLS, ACLS, or handled medical emergencies; performed a resuscitation action (fluid resuscitation); or provided critical care or intensive care									

(Check the box if you performed the skill then how much training you had PRIOR to the response and finally how confident you felt in performing the skill).

			Level of Training you had PRIOR to the response			Perceived Level of Confidence				
			1	2	3	1	2	3		5
	Examples of this skill	I Performed	No Training	Some Training	Extensive Training	Not at all Competent	Limited Competence	Somewhat Competent	Moderate Level of Competence	Very Competent
Special Needs	Worked in a special needs shelter or provided care to a population deemed "special needs"									
Wound Care	Performed an I & D; provided infection care, took care of a puncture wound, sutured or dressed a wound									

33. Based on your experience, rank the top 5 skills that you performed (1 being the skill that you performed most frequently)
(Place a number between 1 -5 in the box corresponding with the top 5 skills you performed. Rank ONLY five please.)

	1-5
Administration	
Assessment	
Basic Clinical Skills	
Immunizations	
Liaison	
Logistics	
Medication Dispensing	
Mental Health	
Needs Assessment	
Pharmacology	
Respiratory Care	
Resuscitation	
Special Needs	
Triage	
Wound Care	

34. During my disaster experience I observed: **(Place a check in the box that best applies)**

	No	**Yes**	**I would prefer not to answer**
Discrimination			
Physical assault			
Sexual assault			
Sexual harassment			
Use of alcohol			
Use of illegal drugs			

55. The following is a list of experiences that may affect people emotionally. After reflecting on your personal response experience, please indicate how you currently feel about each of the experiences listed under #35. If you did not experience the event, please select "NO – Did not experience this event." If you did experience the event, please rate the extent to which this experience affected you. **(Place a check in the box that best applies).**

At the disaster site where I worked I had the following experience:	Did Not Occur	This Experience Affected Me To...				
		1	2	3	4	5
		No Extent	Some Extent	A Moderate Extent	A Great Extent	An Extreme Extent
Being in an accident						
Being attacked/ ambushed						
Being rushed by a crowd						
Being threatened by a disaster victim						
Being shot at						
Being robbed						
Seeing the physical devastation						
Seeing dead bodies or body parts						
Handling or uncovering dead bodies or body parts						
Smelling the stench of decomposing bodies						
Witnessing an accident which resulted in serious injury or death						
Witnessing hostility between disaster victims						
Seeing seriously injured disaster victims						
Having to aid in the removal of hazardous materials						
Working in areas where there was high crime or civil unrest						
Riding through areas where there was high crime or civil unrest						
Having hostile reactions from disaster victims you were trying to help						

(Place a check in the box that best applies).

At the disaster site where I worked I had the following experience:	Did Not Occur	This Experience Affected me to...				
		1	2	3	4	5
		No Extent	Some Extent	A Moderate Extent	A Great Extent	An Extreme Extent
Having grateful reactions from disaster victims you were trying to help						
Disarming (removing weapons) from disaster victims						
Having contact with traumatized disaster victims						
Having to exercise restraint while working with disaster victims						
Witnessing hostility over property disputes						
Seeing children who were disaster victims						
Needing to police or manage disaster victims in chaotic or unpredictable conditions						
Feeling “unsafe”						

36. Since returning, have you talked with someone about your experiences during your disaster response? (Circle)

No

Yes If yes, please indicate with whom you talked. Check all that apply

	Spouse/ Partner
	Family member
	Friend
	Someone else who responded with you
	Supervisor
	Co-worker
	Your healthcare provider
	Mental health professional
	Religious leader
	Other

37. Please rate to what extent were you able to return to your previous (pre-disaster response) health provider roles and responsibilities? (Circle)

Not at all—I work outside of healthcare

Not at all—I am no longer in healthcare

Not at all—I have retired

A few of my roles and responsibilities

Half of my roles and responsibilities

Most of my roles and responsibilities

All of my roles and responsibilities

I have a different job in healthcare—fewer responsibilities

I have a different job in healthcare—more responsibilities

Other [Text box]

38. In your opinion, have you returned to your pre-response "baseline" state of feeling stable or normal baseline? (Circle)

Yes [go to question 38a]

No--I had no change in my baseline [skip question 39]

38a. How long did it take before you returned to your pre-response "baseline" state of feeling stable or normal? (Fill in the blank)

_____ days

_____ weeks

_____ months

_____ years

39. In reflecting back on this disaster response overall, my response was a positive experience? (Circle)

Strongly disagree

Disagree

Neutral

Agree

Strongly agree

40. In reflecting back on this disaster response overall, my response was a satisfying experience? (Circle)

Strongly disagree

Disagree

Neutral

Agree

Strongly agree

41. Without hesitation, I would volunteer for a disaster response again? (Circle)

Strongly disagree
Disagree
Neutral
Agree
Strongly agree

42. I reflecting back on this disaster response, I believe that my ability to recall events is…? (Circle)

Very vivid—like it happened yesterday
Vivid--I can remember most events exactly, I can't remember or mix up the names of people or places
Somewhat vivid—I can remember about 50% of the events exactly & mix up the remaining events, names of people or places
Not so clear—I can remember a few events exactly and get others mixed up
I can't remember the events, people or places well at all

43. Is there anything else you want to tell us about your experience? (circle)

No

Yes Use the space below

44. If you would like to participate in a follow-up survey or interview, put in your email address so we may contact you:

_____**email**

Thank you for participating. You responses are important and will be kept confidential. Nothing that you have indicated will be attributed to either you as an individual or your organization. Please feel free to pass the URL to this site to others that you feel may be interested in responding. **http://www.usuhs.mil/disastersurvey**

Directions for this section. Please:

1. Circle the response that best fits your answer.
2. Where there is a line, write in a response.
3. Where there is a box, place a check in the best response.

Demographic Information:

1. Are you a Healthcare Provider? (Circle)

Yes
No If no…Please stop…..Thank you for participating

2. Did you respond to Hurricane Katrina or Hurricane Rita? (Circle)

Yes
No If no…Please stop….Thank you for participating

3. Would you describe your healthcare provider role as: (Circle)

MD
Registered Nurse
(Other….Please stop….Thank you for participating)

4. What is your highest level of education? (Circle)

RNs
Diploma
Post-diploma certificate
Associate Degree
Baccalaureate
Master's degree—nursing
Master's degree—other
Specialty_____
Practice Doctorate Nursing
Research Doctorate Nursing
Doctorate in another field
Specialty_____

MDs
Doctor of Medicine
Doctor of Medicine/PhD
Specialty_____
Doctor of Osteopathy
Doctorate in another field
Specialty_____

5. Number of years you have practiced as a healthcare provider? _____ years (Fill in the blank)

6. Do you usually work: (Circle)

Full time
Part time

7. Would you describe the area where you are employed as: (Circle)

Rural
Suburban
Urban

8. The following best describes the type(s) of patient population(s) that I work with [check as many as appropriate]

✓	
	Adults
	Emergency room
	Family practice
	General internal medicine
	Geriatrics
	Intensive/ critical care
	Obstetrics/ Gynecology
	Operating room
	Pediatrics
	Surgical care
	Other specialty or sub-specialty care
	I do not regularly take care of patients

9. My practice area or specialty is: [check the one that best applies]

✓	RNs
	Administration/ Management
	Anesthesia
	Cardiology
	Critical Care (ICU, CCU, SICU)
	Educator
	Emergency Department
	Ethics
	Gerontological Nursing
	Health Policy
	HIV/ AIDS Care
	Home Health
	Hospice
	Informatics
	Long-Term Care
	Medical/ Surgical
	Neonatal
	Neurology
	Occupational Health
	Oncology
	Orthopedics
	Pediatrics
	Perinatal
	Perioperative
	Primary Care
	Psychiatric/ Mental Health
	Rehabilitation
	Research
	Women's Health (OB/GYN)

Other_____

✓	MDs
	Aerospace Medicine
	Allergy/ Immunology
	Anesthesiology
	Cardiovascular Medicine
	Dermatology
	Emergency Medicine
	Endocrinology
	Family/General Practice
	Gastroenterology
	Geriatrics
	Hematology
	Internal Medicine
	Medical Genetics
	Neonatology
	Nephrology
	Neurology
	Nuclear Medicine
	Obstetrics / Gynecology* (combined)
	Occupational Medicine
	Oncology
	Ophthalmology
	Otorhinolaryngology
	Pathology (Anat/ Clinical/ Forensic)
	Pediatrics
	Physical Med. & Rehab.
	Preventive Medicine
	Psychiatry
	Pulmonary Med.
	Radiology, Diagnostic
	Radiology, Therapeutic
	Surgery (Gen/ Specialty)
	Urology

Other_____

10. I work primarily in the following setting: [check the best one that applies]

RNs

✓	
	Academia
	Ambulatory Care/ Clinic / HMO
	Business/ Corporation
	College Health
	Fire/ EMS
	Free Standing Surgery Center
	Government Agency
	Health Insurance
	Home Health
	Hospice
	Hospital/ Multi-hospital System
	Locum Tenens
	Long Term Care
	Managed Care
	Military
	Occupational Setting
	Private Practice
	Public Health/ Community Agency
	Quality/ Utilization Review
	School Health Nurse
	Full-time student
	Self-Employed

Other_____

MDs

✓	
	Academia
	Ambulatory Care/ Clinic
	Business/ Corporation
	Fire/ EMS
	Free Standing Surgery Center
	Government Agency
	Health Insurance
	Home Health
	Hospice
	Hospital/ Multi-hospital System
	Locum Tenens
	Long Term Care
	Managed Care
	Military
	Occupational Setting
	Pre-paid Plan/ HMO
	Private Group or Solo Practice
	Public Health/ Community Agency
	Quality/ Utilization Review
	Full-time student
	Self-Employed

Other_____
Board Certification _____

11. In the last 2 years, on average how many hours per month have you practiced in your field? _____hours (fill in)

12. In the last 2 years: **(fill in the blanks)**

a. On average how many hours per month have you provided direct patient care? ____**hours**

b. On average how many hours per month of education and/ or training have you participated in to maintain your currency? _____ **hours**

13. Before Katrina or Rita, how many other emergency responses had you directly participated in? _____ responses

14. Before Katrina or Rita, how many days total had you been involved in emergency responses? _____days

15. Before Katrina or Rita had you completed the following training? [If you check yes, please provide the month and year of training and check whether the training was helpful].

Training	No ✓	Yes ✓	Month/ year of training	Was Training Helpful?	
				No ✓	Yes ✓
IS-100 Basic Incident Command System					
IS-200 Advance Incident Command System					
IS-700 National Incident Management System (NIMS), An Introduction					
IS-800 National Response Plan (NRP), An Introduction					

16. Before Katrina or Rita, had you received any formal training in disasters or emergency preparedness? (Circle)

No

Yes (If yes, list one example)

Name of training_____[name of training]

Approximate number of hours? _____hours

Organization providing the training?_____ [insert name]

Was the training required? (Circle) Yes No

Did you received CE for the training? (Circle) Yes No

Type of training (Circle)

Computerized distance learning

Drills or exercises

Traditional lecture format

Training through audios or videos

Videoconferencing

Written materials

Was this training helpful to you during your response? (Circle) Yes No

17. How many times did you respond to Hurricane Katrina or Hurricane Rita? _____ times (fill in)

17a. Tell me about your FIRST response to Hurricanes Katrina or Rita.

Dates of your FIRST response (Fill in the blanks)

Start date of first response _____Month

_____Day

_____Year

End date of first response _____Month

_____Day

_____Year

Location: _____ City

Location: _____ State

17b. Was your main role mainly…. (Circle)

Administrative (i.e. administrative, leadership, management)?

Directly providing patient care?

17c. Did you respond as a member of an organized response group? (Circle)

No (….skip to #18)

Yes (If yes, pick the organized group)

American Red Cross

Department of Health and Human Services Volunteer

Medical Reserve Corps

Military

National Disaster Medical System

US Public Health Service

Other:_____ [fill in the name]

17d. Does this group requires specific training? (Circle) Yes No

17e. I had completed the required specific training? (Circle) Yes No

18. I worked the longest time at: (Circle)

Air Evacuation site

Base camp

Command post

Health clinic (established)

Health clinic (temporary)

Medical strike team (mobile assessment team)

Self-care shelter established by the Red Cross

Self-care shelter established by Health and Human Services (Federal Medical Shelter)

Self-care shelter established by a Faith-based organization

Self-care shelter established by a city/state government

Special needs shelter

Staging area

Other _____(fill in)

19. Your gender is: (Circle)

Male

Female

20. Your age in years is: _____years (fill in)

21. Your race: (Circle all that apply)

Alaska Native

American Indian

Asian

Black/ African American

Caucasian/ White

Native Hawaiian or Pacific Islander

Other_____ (fill in)

22. Your ethnicity is: (Circle)

Hispanic or Latino

Not Hispanic or Latino

23. Did you live in the immediate Hurricane Katrina or Hurricane Rita area (within 100 miles)? (Circle)

No

Yes

24. Rank order, my referred method of learning is: (Place in rank order 1 – 6, with 1 being the most preferred)

	1-6
Computerized distance learning	
Drills or exercises	
Traditional lecture format	
Training through audios or videos	
Videoconferencing	
Written materials	

Transition is defined as a passage from one life phase, condition or status to another, between periods of stable states. For the purpose of this study, transition refers to the way people respond to change or adapt to new situations or circumstances during a disaster response in order to incorporate the change event into their lives over time.

26. BEFORE YOU LEFT FOR THE DISASTER, how important was each item to your transition TO your disaster role: (Check the box if it happened, then rate how important each item was to you).

		How Important was Each Item Under #26 to Your Transition *TO* Your Disaster Role				
		1	2	3	4	5
26. Before you left for the disaster:	This happened To me ✓	Not Important	Somewhat Important	Moderately Important	Important	Very Important
I knew where to go (I had a name and an address of a location)?						
I knew how I was supposed to get there (airline ticket, travel by personal vehicle, travel by government vehicle, ride from the airport, etc.)?						
I had a specific person to report in to?						
I was provided with a specific place to check-in upon my arrival at the disaster site?						
I knew what my role would be?						
I knew approximately how long I would be gone for?						
I was told what personal items to take?						
I was told what professional items to take?						
I was told what copies of credentials (copies of license, BLS, ACLS, certifications, etc.) to take?						
I knew what the sleeping arrangements were (a hotel, a building, a tent, availability of a shower, etc.)?						
I knew what the eating arrangements were (catered meals, Meals Ready-to-Eat (MREs), that I should bring my own food)?						
I knew what I would be drinking (purified water available, I needed to bring water with me, etc.)?						
My family or friends had an emergency contact number for me?						
I had a point of contact(s) for the period that I was traveling to my disaster destination?						

27. AT THE DISASTER SITE WHERE YOU WORKED, how important was each item to your transition TO your disaster role: (Check the box if it happened, then rate how important each item was to you).

		How Important was Each Item Under #27 to Your Transition *TO* Your Disaster Role				
		1	2	3	4	5
27. At the disaster site where I worked:	This happened To me ✓	Not Important	Somewhat Important	Moderately Important	Important	Very Important
I was told what the chain of command was (who was in charge/ who I reported to)?						
I received a situation briefing (told what was happening) upon my arrival?						
I was provided with a description of a specific role that I would accomplish?						
I was introduced to my co-workers?						
I was provided a code of conduct (professional conduct, no drugs or alcohol used, where to report concerns, etc.)						
I was provided with a list of acronyms?						
Someone provided me with an orientation to the physical layout of the organization where I worked?						
I was told what to do/who to call in an emergency?						
I was told what the evacuation plan for my area was (where the "rally point" was)?						
Someone provided me with an orientation to all of the medical equipment in the area where I worked?						
There was a documentation system (clinical notes) in place						
Someone provided me with an orientation to documentation that was being used?						
Someone provided me with an orientation to communication equipment in the area where I worked?						
I was provided with a list of contacts for other work areas?						
There were policies/ procedures in place?						
Someone oriented me to the policies and procedures that were in place?						
I was told how to protect myself?						
I was told what my work shift was?						
I knew who my supervisor was at all times?						
I was told what the levels of my decision-making authorities were?						
I knew where the next higher referral location for the next level of care was?						
I was told about equipment/supply levels (how much was on hand, when the next delivery was expected)?						

27. AT THE DISASTER SITE WHERE YOU WORKED, how important was each item to your transition TO your disaster role: (Check the box if it happened, then rate how important each item was to you).

		How Important was Each Item Under #27 to Your Transition *TO* Your Disaster Role				
		1	2	3	4	5
27. At the disaster site where I worked:	This happened To me ✓	Not Important	Somewhat Important	Moderately Important	Important	Very Important
I was told how equipment/supplies were ordered?						
I was told about safety procedures?						
I was provided with Personal Protective Equipment (PPE) (masks, goggles, etc.)						
I was instructed on how to use PPE?						
I received a daily update of new information?						
There was always someone available to answer a question or show me something that I did not know or felt uncomfortable doing by myself?						

My supervisor was responsible for an average of _____ people (fill in)

I was a supervisor (Circle) Yes No

If Yes How many people did you supervise? _____ people

(Check the box if it happened, then rate how important each item was to you).

		How Important was Each Item Under #27 to Your Transition *TO* Your Disaster Role				
		1	2	3	4	5
27. At the disaster site where I worked:	This happened To me ✓	Not Important	Somewhat Important	Moderately Important	Important	Very Important
I kept a daily log of personnel						
I kept a daily log of assignments						
I kept a daily log of events						

28. BEFORE LEAVING THE DISASTER SITE, how important was each item to your transition TO your disaster role: (Check the box if it happened, then rate how important each item was to you).

		How Important was Each Item Under #28 to Your Transition *TO* Your Disaster Role				
		1	2	3	4	5
28. Before leaving the disaster site:	This happened To me ✓	Not Important	Somewhat Important	Moderately Important	Important	Very Important
I briefed my replacement?						
I briefed my supervisor?						
I returned issued equipment?						
I completed check-out procedures?						
I provided follow-up contact information for myself?						
I was provided with a point of contact for questions or concerns?						
I had a chance to talk about what had happened with others (sometimes called a debriefing)?						

29. AFTER RETURNING HOME, how important was each item to your transition TO your disaster role: (Check the box if it happened, then rate how important each item was to you)**.**

		How Important was Each Item Under #27 to Your Transition *TO* Your Disaster Role				
		1	2	3	4	5
29. After returning home:	This happened To me ✓	Not Important	Somewhat Important	Moderately Important	Important	Very Important
I notified the people that deployed me that I had arrived safely home?						
The organization that I deployed with asked me for my input about what had happened (sometimes called an after action report)?						
I completed an after action report?						

Basic clinical care is defined as those clinical interventions undertaken to stabilize and maintain a patient. For the purpose of this study, basic clinical care does NOT include medication dispensing or immunization, resuscitation (emergency care, Basic Life Support, Advance Cardiac Life Support, a resuscitative action, acute care, critical care or intensive care) or wound care (care related to wound care or dressings, care of puncture wounds or sutures). You will be asked a series of questions: if you performed a specific skill, how much training you have received in the specific skill and your level of confidence in performing the skill in this environment. Answer the perceived level of confidence question as if you were completing this statement...."I felt...[insert your response] competence/competent performing in this situation". **(Check the box if you performed the skill then how much training you had PRIOR to the response and finally how confident you felt in performing the skill).**

30. Overall basic clinical care I Performed ☐ I Did Not Perform..... ☐ IF SKILL WAS NOT PERFORMED, SKIP TO QUESTION 31.

	Check if you performed this on site	Amount of Training PRIOR to this response			Perceived Level of Confidence				
		1	2	3	1	2	3	4	5
		None	Some	Extensive	No	Limited	Some	Moderate	Very
Assessment and follow-up	✓								
Clinically assessed lung sounds									
Manually counted respirations									
Interpreted lab results									
Obtained a medical history									
Ordered diagnostic scan									
Ordered laboratory test									
Ordered a medical procedure/treatment									
Ordered X-Ray									
Performed a physical exam									
Took a blood pressure with a manual blood pressure cuff									
Took an oral temperature (mercury thermometer)									
Took an rectal temperature (mercury thermometer)									
Took an auxiliary temperature (mercury thermometer)									

(Check the box if you performed the skill then how much training you had PRIOR to the response and finally how confident you felt in performing the skill).

	Check if you performed this on site	Amount of Training PRIOR to this response			Perceived Level of Confidence				
		1	2	3	1	2	3	4	5
		None	Some	Extensive	No	Limited	Some	Moderate	Very
Documentation	✓								
Document allergies									
Document initial assessment									
Document medication administration									
Document next of kin									
Document past medical history									
Document previously prescribed medications									
Document provided clinical care									
Document treatment administration									
Use a triage tag									
Use a patient log									
Hydration									
Performed “the pinch test”									
Provided oral hydration using water									
Provided oral hydration using a commercially prepared oral hydration (electrolyte) solution or preparation (i.e. Pedialyte™)									
Provided oral hydration using a manually prepared oral hydration solution or preparation									
Informally monitored hydration status									
Formally monitored hydration status-recorded input									
Formally monitored hydration status-recorded output									
Manually managed an in-place intravenous (counted drops-macro chamber)									
Manually managed an in-place intravenous (counted drops-micro chamber)									

(Check the box if you performed the skill then how much training you had PRIOR to the response and finally how confident you felt in performing the skill).

	Check if you performed this on site	Amount of Training PRIOR to this response			Perceived Level of Confidence				
		1	2	3	1	2	3	4	5
		None	Some	Extensive	No	Limited	Some	Moderate	Very
Hydration (continued)	✓								
Manually managed an in-place intravenous (counted drops using a Burretrol™ chamber to avoid fluid overload)									
Managed an in-place intravenous using an IV pump									
Managed a device									
Abdominal drain (tube with a collection device)									
Cast									
Cervical collar									
Chest tube with a one-way valve									
Chest tube with a pleurovac									
Colostomy									
Nasogastric tube									
Penrose drain									
Sling									
Splint									
Trachea tube									
Traction									
Urinary catheter external (Texas catheter)									
Urinary catheter internal (indwelling device)									
Urinary collection bag (pediatric)									
Procedures									
Applied a cast									
Applied a cervical collar									
Applied a sling									
Applied a splint									
Applied traction									

(Check the box if you performed the skill then how much training you had PRIOR to the response and finally how confident you felt in performing the skill).

	Check if you performed this on site	Amount of Training PRIOR to this response			Perceived Level of Confidence				
		1	2	3	1	2	3	4	5
		None	Some	Extensive	No	Limited	Some	Moderate	Very
Procedures (continued)	✓								
Drew blood									
Eye irrigation									
Inserted an internal urinary catheter									
Inserted a nasogastric tube									
Inserted a oral-pharyngeal airway									
Provided O_2 by nasal cannula									
Provided O_2 by mask									
Provided a nebulizer treatment									
Suctioned a patient									
Used tank oxygen									
Wound irrigation									
Provided patient education									
Cast care									
Sling care									
Splint care									
Signs/symptoms of dehydration									
Signs/symptoms of infection									
Use of crutches									
When to return for follow-up or treatment									
Provided physical care									
Provided a bed bath (partial or full)									
Provided skin care									
Provided a shower									
Provided nutrition through a gastrostomy tube									
Scrubbed an injury to clean it									
Soaked an injury to clean it									

(Check the box if you performed the skill then how much training you had PRIOR to the response and finally how confident you felt in performing the skill).

	Check if you performed this on site	Amount of Training PRIOR to this response			Perceived Level of Confidence				
		1	2	3	1	2	3	4	5
		None	Some	Extensive	No	Limited	Some	Moderate	Very
Provided physical care (continued)									
Turned a patient according to a routine									
Provided post-mortem care									
Provided mental health support	✓								
Provided active listening									
Held a hand or "gave a hug"									
Provided recommendations									
Referred the patient to another resource									
Used technology									
Took a blood pressure with an automatic blood pressure cuff (B/P only)									
Took a temperature with a ear (aural) thermometer									
Took a temperature with an automatic thermometer									
Took a temperature with skin scanning (thermo-scanning) device									
Took vital signs with an automatic machine									
Used a "bench top" or "bedside" pregnancy test									
Used a "bench top" or "bedside" strep throat test									
Used a "bench top" or "bedside" urinalysis (dip stick or strips)									
Used a "bench top" or "bedside" urinalysis (machine)									
Used a 12-lead EKG machine									
Used a 3 or 4 lead cardiac monitor									
Used a glucometer									
Used a pulse oximeter									
Used an I-Stat™ (field deployable, hand-held blood chemistry lab device)									
Used an O_2 concentrator									

(Check the box if you performed the skill then how much training you had PRIOR to the response and finally how confident you felt in performing the skill).

	Check if you performed this on site	Amount of Training PRIOR to this response			Perceived Level of Confidence				
		1	2	3	1	2	3	4	5
		None	Some	Extensive	No	Limited	Some	Moderate	Very
Discharge planning/ social assistance	✓								
Personally coordinated resources for the patient									
Provided translation services (patient other than English as a first language)									
Referred the patient to another resource (support services)									
Reported a communicable disease									
Wrote a medical referral for follow-up									

Triage is defined as the medical screening of two or more patients to determine their relative priority for treatment. In a mass casualty situation, triage involves a brief assessment. As a result of the evaluation, patients are placed in one of four categories: immediate; delayed; minor; or, dead/dying. During a disaster, triage can be performed at any place where victims are located with little or no equipment, and usually involves a primary assessment as well as multiple secondary assessments based on the severity of the patient's injuries and the resources that are available. Answer the perceived level of confidence question as if you were completing this statement...."I felt...[insert your response] competence/competent performing in this situation". **(Check the box if you performed the skill then how much training you had PRIOR to the response and finally how confident you felt in performing the skill).**

31. Triage I Performed ☐ I Did NOT Perform ☐ IF SKILL WAS NOT PERFORMED, SKIP TO QUESTION 32.

	Check if you performed this on site	Amount of Training PRIOR to this response			Perceived Level of Confidence				
		1	2	3	1	2	3	4	5
		None	Some	Extensive	No	Limited	Some	Moderate	Very
Triage	✓								
Infants-medical emergencies									
Infants-injuries or trauma									
Children-medical emergencies									
Children-injuries or trauma									
Adults-medical emergencies									
Adults-injuries or trauma									
Geriatrics-medical emergencies									
Geriatric-injuries or trauma									

32. Did you perform any of the following? **(Check the box if you performed the skill then how much training you had PRIOR to the response and finally how confident you felt in performing the skill).**

			Amount of Training PRIOR to this response			Perceived Level of Confidence				
			1	2	3	1	2	3	4	5
	Examples of this skill	Check if you performed this on site ✓	None	Some	Extensive	No	Limited	Some	Moderate	Very
Administration	Filled a command, leadership, management, negotiation, organization, organizing, oversight or planning or supervision role; filled an administrative position; or filled an administrative function—completed paperwork, developed policy, procedures or wrote reports									
Assessment	Performed an assessment function—individual (presenting medical illness)									
Immunizations	Administered immunizations or vaccines to individuals									
Liaison	Conducted community outreach or coordination functions; or acted as a liaison to a governmental or non-governmental body (State liaison, American Red Cross or faith-based organization)									

(Check the box if you performed the skill then how much training you had PRIOR to the response and finally how confident you felt in performing the skill).

			Level of Training you had PRIOR to the response			Perceived Level of Confidence				
			1	2	3	1	2	3		5
	Examples of this skill	I Performed	No Training	Some Training	Extensive Training	Not at all Competent	Limited Competence	Somewhat Competent	Moderate Level of Competence	Very Competent
Logistics	Inventoried, ordered, stored or dispensed resources or supplies									
Medication Dispensing	Dispensed medication by any route (PO, IM, SC, etc.)									
Mental Health	Provided counseling, crisis intervention or psychological support									
Needs Assessment	Conducted a community assessment or needs assessment (public health or critical infrastructure sector—i.e. water and sanitation)									
Pharmacology	Refilled and/ or dispensed medication, conducted a medication assessment or review, or prescription writing									
Respiratory Care	Provided breathing, respiratory management or respiratory treatment									
Resuscitation	Provided CPR, BLS, ACLS, or handled medical emergencies; performed a resuscitation action (fluid resuscitation); or provided critical care or intensive care									

(Check the box if you performed the skill then how much training you had PRIOR to the response and finally how confident you felt in performing the skill).

			Level of Training you had PRIOR to the response			Perceived Level of Confidence				
			1	2	3	1	2	3		5
	Examples of this skill	I Performed	No Training	Some Training	Extensive Training	Not at all Competent	Limited Competence	Somewhat Competent	Moderate Level of Competence	Very Competent
Special Needs	Worked in a special needs shelter or provided care to a population deemed "special needs"									
Wound Care	Performed an I & D; provided infection care, took care of a puncture wound, sutured or dressed a wound									

33. Based on your experience, rank the top 5 skills that you performed (1 being the skill that you performed most frequently)
(Place a number between 1 -5 in the box corresponding with the top 5 skills you performed. Rank ONLY five please.)

	1-5
Administration	
Assessment	
Basic Clinical Skills	
Immunizations	
Liaison	
Logistics	
Medication Dispensing	
Mental Health	
Needs Assessment	
Pharmacology	
Respiratory Care	
Resuscitation	
Special Needs	
Triage	
Wound Care	

34. During my disaster experience I observed: **(Place a check in the box that best applies)**

	No	**Yes**	**I would prefer not to answer**
Discrimination			
Physical assault			
Sexual assault			
Sexual harassment			
Use of alcohol			
Use of illegal drugs			

55. The following is a list of experiences that may affect people emotionally. After reflecting on your personal response experience, please indicate how you currently feel about each of the experiences listed under #35. If you did not experience the event, please select "NO – Did not experience this event." If you did experience the event, please rate the extent to which this experience affected you. **(Place a check in the box that best applies).**

At the disaster site where I worked I had the following experience:	Did Not Occur	This Experience Affected Me To...				
		1	2	3	4	5
		No Extent	Some Extent	A Moderate Extent	A Great Extent	An Extreme Extent
Being in an accident						
Being attacked/ ambushed						
Being rushed by a crowd						
Being threatened by a disaster victim						
Being shot at						
Being robbed						
Seeing the physical devastation						
Seeing dead bodies or body parts						
Handling or uncovering dead bodies or body parts						
Smelling the stench of decomposing bodies						
Witnessing an accident which resulted in serious injury or death						
Witnessing hostility between disaster victims						
Seeing seriously injured disaster victims						
Having to aid in the removal of hazardous materials						
Working in areas where there was high crime or civil unrest						
Riding through areas where there was high crime or civil unrest						
Having hostile reactions from disaster victims you were trying to help						

(Place a check in the box that best applies).

At the disaster site where I worked I had the following experience:	Did Not Occur	This Experience Affected me to...				
		1	2	3	4	5
		No Extent	Some Extent	A Moderate Extent	A Great Extent	An Extreme Extent
Having grateful reactions from disaster victims you were trying to help						
Disarming (removing weapons) from disaster victims						
Having contact with traumatized disaster victims						
Having to exercise restraint while working with disaster victims						
Witnessing hostility over property disputes						
Seeing children who were disaster victims						
Needing to police or manage disaster victims in chaotic or unpredictable conditions						
Feeling “unsafe”						

36. Since returning, have you talked with someone about your experiences during your disaster response? (Circle)

No

Yes If yes, please indicate with whom you talked. Check all that apply

	Spouse/ Partner
	Family member
	Friend
	Someone else who responded with you
	Supervisor
	Co-worker
	Your healthcare provider
	Mental health professional
	Religious leader
	Other

37. Please rate to what extent were you able to return to your previous (pre-disaster response) health provider roles and responsibilities? (Circle)

Not at all—I work outside of healthcare

Not at all—I am no longer in healthcare

Not at all—I have retired

A few of my roles and responsibilities

Half of my roles and responsibilities

Most of my roles and responsibilities

All of my roles and responsibilities

I have a different job in healthcare—fewer responsibilities

I have a different job in healthcare—more responsibilities

Other [Text box]

38. In your opinion, have you returned to your pre-response "baseline" state of feeling stable or normal baseline? (Circle)

Yes [go to question 38a]

No--I had no change in my baseline [skip question 39]

38a. How long did it take before you returned to your pre-response "baseline" state of feeling stable or normal? (Fill in the blank)

_____ days

_____ weeks

_____ months

_____ years

39. In reflecting back on this disaster response overall, my response was a positive experience? (Circle)

Strongly disagree

Disagree

Neutral

Agree

Strongly agree

40. In reflecting back on this disaster response overall, my response was a satisfying experience? (Circle)

Strongly disagree

Disagree

Neutral

Agree

Strongly agree

41. Without hesitation, I would volunteer for a disaster response again? (Circle)

Strongly disagree
Disagree
Neutral
Agree
Strongly agree

42. I reflecting back on this disaster response, I believe that my ability to recall events is…? (Circle)

Very vivid—like it happened yesterday
Vivid--I can remember most events exactly, I can't remember or mix up the names of people or places
Somewhat vivid—I can remember about 50% of the events exactly & mix up the remaining events, names of people or places
Not so clear—I can remember a few events exactly and get others mixed up
I can't remember the events, people or places well at all

43. Is there anything else you want to tell us about your experience? (circle)

No

Yes Use the space below

44. If you would like to participate in a follow-up survey or interview, put in your email address so we may contact you:

_____**email**

Thank you for participating. You responses are important and will be kept confidential. Nothing that you have indicated will be attributed to either you as an individual or your organization. Please feel free to pass the URL to this site to others that you feel may be interested in responding. **http://www.usuhs.mil/disastersurvey**

UNIFORMED SERVICES UNIVERSITY OF THE HEALTH SCIENCES
4301 JONES BRIDGE ROAD
BETHESDA, MARYLAND 20814-4799

July 17, 2007

MEMORANDUM FOR CAPT LYNN SLEPSKI, RN, MSN, CCNS, GRADUATE SCHOOL OF NURSING

SUBJECT: Uniformed Services University Institutional Review Board Approval (DoD Assurance No. P60001 and FWA # 00001628) of Amendment to HU61GR

The amendment to your protocol HU61GR entitled, "***Emergency Preparedness and Professional Competency Among Health Care Providers During Hurricanes Katrina and Rita***," was reviewed and approved for execution on July 17, 2007 by Edmund G. Howe, M.D., J.D., Chairperson, Institutional Review Board, under the provisions of 32 CFR 219.110(b)(2). This approval will be reported to the full Uniformed Services University IRB scheduled to meet on August 9, 2007.

This is a two phase study that will assess the effect of competency preparedness on health care providers' sense of readiness for the Hurricane Katrina/Rita disaster.

This action approves amendment #2.

Authorization to conduct this protocol will automatically terminate on March 11, 2008. If you plan to continue data collection or analysis beyond this date IRB approval for continuation is required. Please submit a USU Form 3204A/B (application for continuing approval) to the Office of Research by **January 11, 2008**. Though we will attempt to assist you by sending you a reminder, submission of an application for continuation is <u>your</u> responsibility. *Please note the termination date and the date for submission of your USU Form 3204 in your calendar!*

You are required to submit amendments to this protocol, changes to the informed consent document (if applicable), adverse event reports, and other information pertinent to human research for this project to this office for review. No changes to this protocol may be implemented prior to IRB approval. If you have questions regarding specific issues on your protocol, or questions of a more general nature concerning human participation in research, please contact me at 301-295-0814 or lgiberman@usuhs.mil.

cc: Chair, GSN
REA
File

Laura Giberman
Institutional Review Board Coordinator

Amendment 2 Continuation

VPR Date Stamp

USU FORM 3204A
RESEARCH INVOLVING HUMAN PARTICIPANTS
(continuing/annual review)

SECTION I PROTOCOL INFORMATION

Protocol No.: HU61GR (Slepski)

Principal Investigator: CAPT Lynn Slepski

Department: Graduate School of Nursing

Cell (202) 528-7086

E-Mail: Lynn.Slepski@dhs.gov

Pager or Other Phone Number Home (301) 527-8534

Project Title: Emergency Preparedness and Professional Competency Among Health Care Providers During Hurricanes Katrina and Rita

SECTION II STATUS OF THE STUDY {Mark the status of the study (a-g) and note the specific information that must be submitted}.

a. _____ **No participants accrued/data collected in this study** - termination requested. [Complete section III only].

b. _____ **Participant accrual/data collection for this study is pending -** continued approval requested. [Submit Sections III and IV (2, 8, and 10)].

c. _____ **Active with ongoing participation of subjects/data collection: Participant accrual/data collection not completed.** [Submit Sections III and IV (1 and 3-11)].

d. _____ **Active with ongoing participation of subjects: Participant accrual completed.** [Submit Sections III and IV (1 and 3-9)].

e. _____ **Active with follow-up of participants only.** [Submit Sections III and IV (4 only)].

f. XX _____ **Active with data analysis only: Subject participation/data collection completed.** [Submit Sections III and IV (1 - 4).]

g. _____ **Completed. Participants will not be followed/data analysis completed.** Date of Completion: _____ [Submit Sections III and IV (1 and 3-9) as a final human participant use report.

SECTION III. CERTIFICATION OF PRINCIPAL INVESTIGATOR

Signature certifies that the above titled research has been/will be conducted in full compliance with the DHHS/FDA Regulations and USUHS IRB requirements/policies governing human participant research. It is understood that IRB continuing review is required in order to maintain study approval and that **ANY** changes in the study/methodology which affect the participants must be approved by the IRB prior to implementation. Alternatively, if the study has never been

initiated and you are requesting termination (II[a] above), your signature verifies this request. If the study is completed (II[g] above), the information provided on this form represents an accurate final human research report.

Lynn C. Slyvka
Signature of Principal Investigator

March 14, 2008
Date

SECTION IV SUMMARY OF RESEARCH (use additional sheets as necessary)

DEMOGRAPHIC INFORMATION

1. **Target Accrual number:** What is the target accrual number approved by the IRB? Up to 4000

2. **Non-accrual:** If no participants have been accrued since the last IRB review, the reason(s) for non-accrual must be provided.

3. **Number of participants accrued since last review:** How many participants have been accrued since last review? A total of 256 of which 197 met study inclusion criteria

Total number of participants accrued since activation of the study:

Adults	American Indian or Alaska Native	Asian	Black or African American	Hispanic or Latino	Native Hawaiian or Other Pacific Islander	White or Caucasian	Other or Unknown	Total
Male				1		66	13	80
Female				3		103	13	116
Total Adults							1	1 197*

Children	American Indian or Alaska Native	Asian	Black or African American	Hispanic or Latino	Native Hawaiian or Other Pacific Islander	White or Caucasian	Other or Unknown	Total
Male								
Female								
Total Children								0

*197 of 256 respondents met study inclusion requirements and are reflected above.

STUDY RESULTS

4. **Study Progress/Results:** Provide a brief summary of study progress/results (preliminary or final) obtained in the study. If the study is part of a cooperative group or multi-center trial, a copy of the most recent group-wide progress report must be attached.

Analysis of data is on-going (suspended while renewal is in place). One article discussing transition experiences is underway and anticipated submission is by end of the month. A second article discussing response competencies will be completed in a similar timeframe.

ADVERSE EVENTS AND PROBLEMS

5. **Unanticipated adverse event(s):** From initial approval of the study to the present, has any participant enrolled in your study suffered an unanticipated adverse event? If the

answer is yes, specify the total number of events, date(s) and summarize briefly the overall nature and significance of the adverse event(s).

PARTICIPANT WITHDRAWAL

6. **Involuntary participant withdrawal:** Was any participant withdrawn from your study because of medical complications or other problems? If the answer is yes, provide a brief description of the medical complication/problem for each participant who was involuntarily withdrawn.

7. **Voluntary participant withdrawal:** Did any participant voluntarily withdraw from your study for non-medical reasons? If the answer is yes, provide a brief description of any known reason(s) for each participant who voluntarily withdrew from the study.

CURRENT RISK/BENEFIT ASSESSMENT

8. **Current Risk/Benefit Assessment:** Has anything occurred since the last IRB review that may have altered the risk/benefit relationship? If the answer is yes, provide a current assessment, in your opinion, of the risk/benefit relationship based upon study results, adverse events, or other factors.

INFORMED CONSENT EVALUATION

9. **Informed consent process:** Did any problems occur relative to the obtainment and documentation of informed consent since the last IRB review? If the answer is yes, please provide a brief description of the problems.

10. **Informed consent document:** Is the approved informed consent document still acceptable (i.e., the information contained in the document is accurate and complete and there is no new information, which should be disclosed to the participant)? ***If in your opinion the approved informed consent document is still acceptable, this must be stated and a clean copy of the form(s) must be submitted with this form on USUHS letterhead for a continuing approval stamp.*** If, however, revisions are necessary, this must be stated and a new USUHS Form 3204 must be submitted along with this annual review

11. **Equity or consultative relationship:** Have any investigators developed an equity or consultative relationship with a non-USUHS source related to this protocol which might be considered to be a conflict of interest? ***(If yes, please append a statement of disclosure.)***

12. **Literature review:** Indicate that you have completed an updated scientific literature review IMS **(initial)**. Please list any relevant scientific publications that you found in the literature, and discuss whether and how the results of these published studies impact the risk-benefit relationship of your study.

UNIFORMED SERVICES UNIVERSITY OF THE HEALTH SCIENCES
4301 JONES BRIDGE ROAD
BETHESDA, MARYLAND 20814-4712
www.usuhs.mil

March 17, 2008

MEMORANDUM FOR CAPT LYNN SLEPSKI, RN, MSN, CCNS, GRADUATE SCHOOL OF NURSING

SUBJECT: Uniformed Services University Institutional Review Board Continuation Approval (DoD Assurance No. P60001 and FWA No. 00001628) of HU61GR for Human Subject Participation

Your no more than minimal risk research protocol HU61GR entitled, "***Emergency Preparedness and Professional Competency Among Health Care Providers During Hurricanes Katrina and Rita***," was reviewed and approved for continuation on March 17, 2008 by Edmund G. Howe, M.D., J.D., Chairperson, Institutional Review Board, under the provisions of 32 CFR 219.110(b)(1)Suppl. F(8). **This approval expires on March 11, 2009.** This approval will be reported to the full Uniformed Services University IRB scheduled to meet on April 10, 2008.

This is a two-phase study that will assess the effect of competency preparedness on health care providers' sense of readiness for the Hurricane Katrina/Rita disaster.

This action approves the continuing review for this study. Data analysis is ongoing, but this study is closed to accrual and subject participation.

Authorization to conduct this protocol will automatically terminate on March 11, 2009. If you plan to continue data collection or analysis beyond this date IRB approval for continuation is required. Please submit a USU Form 3204A/B (application for continuing approval) to the IRB Office by **January 10, 2009**. Though we will attempt to assist you by sending you a reminder, submission of an application for continuation is your responsibility. *Please note the termination date and the date for submission of your USU Form 3204 in your calendar!*

You are required to submit amendments to this protocol, changes to the informed consent document (if applicable), adverse event reports, and other information pertinent to human research for this project to this office for review. No changes to this protocol may be implemented prior to IRB approval. If you have questions regarding specific issues on your protocol, or questions of a more general nature concerning human participation in research, please contact me at 301-295-3303/9534 or rlevine@usuhs.mil.

Richard R. Levine, Ph.D.
Assistant Vice-President for Research
and Executive Secretary, IRB

cc: Chair, GSN
VPR/OSP
File

Human Subjects Training

Uniformed Services University
4301 Jones Bridge Road
Bethesda, MD 20814

Certifies that:

Lynn Slepski

completed the University of Miami CITI Human Subjects Research Educational Modules required by Uniformed Services University on

Sunday, May 30, 2004

Margaret Pickerel

Margaret Pickerel
USU Office of Research
Human Research Protections
Training Coordinator
(301-295-3303; mpickerel@usuhs.mil)

Jun 1, 2004

Uniformed Services University
4301 Jones Bridge Road
Bethesda, MD 20814

Certifies that:

Ms. Lynn Slepski

completed the University of Miami CITI Human Subjects Research Educational Modules required by Uniformed Services University on

Monday, September 5, 2005

Margaret Pickerel
USU Office of Research
Human Research Protections
Training Coordinator
(301-295-9534; mpickerel@usuhs.mil)

Sep 7, 2005

Certificate of Training Completion

This certifies that

Lynn Slepski

has successfully completed the following approved training, as required by the Human Research Protection Program: CITI Biomedical Science Course on 10/08/2006. The individual named above is now authorized to engage in the HRPP activities which he or she is qualified and approved to perform.

Ellen P. Embrey
Component Designated Official

10/19/2006
Date

This certification expires on 10/08/2007

Certificate of Training Completion

This certifies that

Lynn Slepski

has successfully completed the following approved training, as required by the Human Research Protection Program: CITI Biomedical Science Course on 12/11/2007. The individual named above is now authorized to engage in the HRPP activities which he or she is qualified and approved to perform.

Ellen P. Embrey
Component Designated Official

12/18/2007
Date

This certification expires on 12/11/2008

Dissertation Proposal Defense

CAPT Lynn Slepski
February 8, 2007

1

Proposal Title

Emergency Preparedness and Professional Competency Among Health Care Providers During Hurricanes Katrina and Rita

2

Dissertation Committee

- Chair: Karen Elberson, PhD, RN
- Members:
  - Robert Bienvenu II, PhD
  - Patricia Hinton Walker, PhD, RN, FAAN
  - Betsy Weiner, PhD, RN, FAAN
- Consultants
  - Dorraine Watts, PhD, RN

3

Introduction

- **September 2005, Hurricane Katrina (Category 5)**
- **Followed by Hurricane Rita (Category 4)**
  - Affected 1.5 million people
  - Approximately 90,000 square miles
  - 770,000 persons displaced
  - 89,000 evacuated
  - Medical infrastructure crumbled
- Largest natural disaster relief and recovery operations in history
- Unprecedented demand for healthcare services

4

Background & Significance

- **Emergency Preparedness (EP)**
  - Term frequently used, but undefined
  - Inconsistently applied
- To resolve gap in literature—Slepski published a concept analysis (2005)
  - "Emergency preparedness is the comprehensive knowledge, skills, abilities and actions needed to prepare for and respond to threatened, actual or suspected chemical, biological, radiological, nuclear or explosive incidents, man-made incidents, natural disasters or other related events" (p. 426).

5

Background & Significance

- **Emergency Preparedness Literature**
  - LITERATURE IS CLEAR that Healthcare providers are the 1st line of defense
  - Health-related EP issues not addressed
  - Responding to disasters is different than working in the familiar day-to-day environment
  - Found only 2 studies—both prospective—knowledge and likelihood to respond to specific types of emergencies
    - Wisniewski – 8 EP dimensions→ overall not prepared
    - Lanzilotti- natural disasters and weapons of mass destruction→ response by disaster type

6

Background & Significance

- **Emergency Preparedness Training**
  - No clearly defined standards or guidelines
    - States define types and quantities of services on their own
    - Workforce training goals and strategies vary widely
  - No single source of authority or approved body for content or curricula→ unfocused training and education efforts
  - Great debate about content of training
  - No certifications needed to become an "expert"
  - ANA and AACN recommend appropriate basic education and continued education, neither define content

7

Background & Significance

- **Related concept—Competency**
- Wright (1998) "the knowledge, skills and abilities (KSAs) to carry out a job" (p. 7)
  - Fulfill the organizational, departmental, and work setting requirements
    - Key essential job functions;
    - Frequently used job functions and accountabilities; and,
    - High-risk job functions and accountabilities that involve actions
    - Especially those that could cause harm, death or legal actions to customers, employees or the organization
  - Are articulated in **measurable statements**

8

Background & Significance

- **Related concept—Competency**
  - Whitcomb—core competencies delineate the knowledge, skills and attitudes learners must acquire to be able to perform
    - Should guide the design and conduct of medical education programs
  - Several have suggested the development of formal emergency preparedness educational core competencies
    - Requirement for continuing education
    - Requisite for privileges or licensure

9

Background & Significance

- **Competing Core Competencies**
  - Healthcare professionals (HCPs) (N > 7)
    - Emergency medical technicians, physicians and nurses
    - Emergency response clinicians
    - Hospital workers
    - Public health workers
    - Public health and hospital nurses,
    - Advanced practice nurses
    - General nurses
  - **Outcome measures**
  - **Validation in the field**
- According to the White House Katrina Report
  - **Required KSAs differed from existing competency lists**

10

Background & Significance

- **Summary**
  - Dearth of research studies examining EP or professional competency in ANY provider type
  - No agreed upon empirically validated standards
  - Despite billions $$$, there is no evidence that:
    - HCPs are adequately prepared
    - Existing training addresses appropriate professional competency requirements
    - Existing training is effective
  - New to investigation=no established instruments
- **Result: Very little is known about what knowledge, skills and abilities are needed in each disaster phase**

11

Exploratory Pilot

- 2006 IRB-approved exploratory Pilot—focus for dissertation
- 15 interviews and 200 anonymous surveys at 2 national volunteer responder conferences where HCPs who deployed to Katrina/Rita were likely to be in attendance
- Results
  - RNs (45%) and MDs (24%)
  - Basic clinical care (39%)** and triage (26%)
  - Least prepared by category:

Expectations	Organization	Resources
Scope	Specific skills	System issues
Other		

12

Exploratory Pilot

- Least prepared--only 22% said they did not know a specific skill (i.e. Personal Protective Equipment)
  - Described was an **abrupt change or transition** from their every day practice worlds
  - **Period of acclimation** where they needed to learn about the people, physical and social environments around them
- 25% recommended training
  - 3% specific clinical skill (ACLS or triage)
  - Remainder identified actions to improve them personally or as a team member
    - **Attitudes and beliefs** (21%) (be flexible-12%)
    - **Personal** preparedness (23%)

13

Federal Relevance

- Hurricanes Katrina and Rita were the first real tests of this alternative, non-hospital concept. According to most, the system stumbled or failed.
- Emergency preparedness is increasingly "big business" ($13 billion FYs 02 -04)
- The nursing science concerning the effect of EP training on the practice of emergency responders is in its infancy

14

Federal Relevance

- This study asks the question **"what emergency preparedness competencies (knowledge, skills and abilities) are needed in each phase of a disaster response?"**
- This study is proposed to begin to raise questions and document answers that specifically address emergency preparedness and professional competency in responding to a hurricane.

15

Overall Study Objective

- The objective of this study is to explore the transitions experienced by responders and examine two specific high-volume competencies, triage and basic clinical care, used by physicians and nurses who responded to Hurricanes Katrina and Rita.

16

Primary Objective 1

Informed by Pilot results, this study will:

1. Describe the characteristics and perceptions of registered nurses and physicians who responded to Hurricanes Katrina and Rita, through the framework of transitions.

17

Primary Objective 2

2. Assess two specific competencies (basic clinical care and triage) that were employed during the Katrina disaster by:

2a. Describing and rank ordering basic clinical care in terms of:

- The most frequently reported skills performed;
- Subjects' perceived level of training (before the response) in the most frequently occurring skills;
- And subjects' self-reported level of confidence and competency in performing these skills;

2b. Comparing and contrasting the most frequently occurring basic clinical care skills performed by RNs and MDs; and

2c. Comparing how these two groups (RN versus MD) differ in basic clinical care skills in terms of perceived training and perceived confidence and competence.

18

Primary Objective 2 (continued)

2. Assess two specific competencies (basic clinical care and triage) that were employed during the Katrina disaster by (continued):

2d. Describing triage in terms of:

- The most frequently reported skills;
- Subjects' perceived level of training (before the response) in the competency;
- Subjects' self-reported level of confidence and competency in performing these skills;

2e. Comparing how these two groups (RN versus MD) differ in triage skills in terms of perceived training and perceived confidence and competence.

19

Primary Objective 3

3. Explore and describe health care provider readiness to respond.

20

Secondary Objectives

1. Identify individual demographic factors that affected the readiness for the specific competencies.
2. Identify areas where readiness could be enhanced for future disaster response missions.

21

Conceptual Models

Meleis- Transitions Theory

22

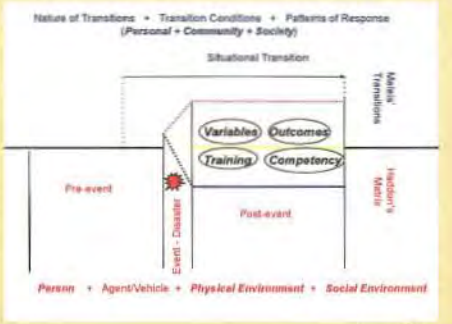
Conceptual Models

Haddon's Matrix

	Pre-event training in roles and responsibilities during a natural disaster	Predicted impact of the storm	National stockpiles of emergency equipment for healthcare workers	Receive timely and reliable updated information on disaster response	
	Trained health care and public health personnel	Storm surge and flooding	Know how to use the stockpiled equipment	Know and use the chain of command	
	Post-event evaluation of healthcare worker competencies	Water contaminants (eg. sewage, chemical contaminants)	Recommend additions/ deletions for future equipment caches	Recognize the symptoms of Post Traumatic Stress syndrome	

23

Synergy of the Models



24

Setting

- To achieve the study objectives, men and women participants over the age of 18 who functioned as healthcare providers during Hurricanes Katrina or Rita will be surveyed using a web-based questionnaire.

25

Subjects

- This study will collect a convenience sample of volunteers through an internet survey who meet study inclusion criteria.
- Subjects will be recruited through self-referral and by directly contacting known experts in the field.
- Inclusion criteria:
  - Healthcare professional [RN and MD]
  - Worked on-site in a disaster response for either Hurricane Katrina or Rita in Alabama, Louisiana or Mississippi.
  - Worked at the disaster site for a minimum of 14 consecutive days (two weeks)
  - Age 18 or older

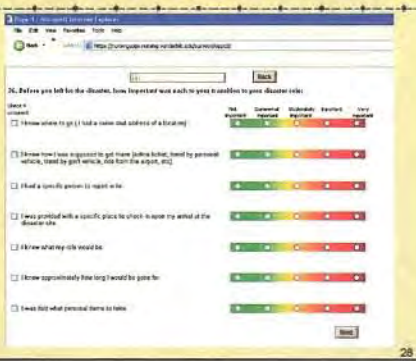
26

Instrument

- Informed by Phase I pilot data, the Phase II survey Instrument is a 43 item, web-based survey designed to capture information on transitions and examine two specific emergency preparedness competencies (basic clinical care and triage)

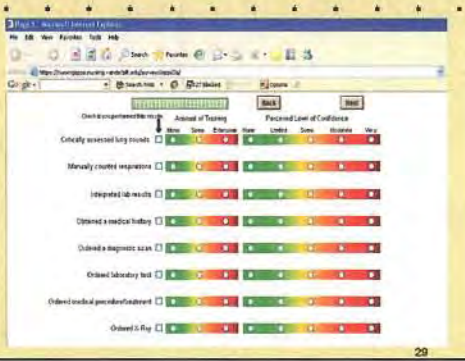
27

Instrument—Transition Information



28

Instrument—Specific Competencies



29

Data Analysis

- Demographic and quantitative information containing descriptive statistics will be summarized and presented
  - Frequencies and simple measures of central tendency (means, medians, and modes)
  - Variability (standard deviations) for continuous variables
  - Percentiles for categorical variables.

30

Data Analysis

- Multiple regression will be used to examine if
  - work status
  - area of work
  - currency
  - usual place of employment
  - specialty
  - number of previous responses
  - membership in a response group or
  - and/or membership in a response group that requires training

is/are predictive of perceived confidence and competence in basic clinical skills and triage.

31

Limitations

- Use of a convenience sample limits the applicability of this study to the larger population of all emergency preparedness responders.
- However, the inclusion of two types of providers plus multiple locations of response sites will increase the amount of information obtained and may demonstrate consistent themes to provide a general base for understanding the phenomenon.

32

Conclusion

- Emergency preparedness is emerging as a critical component of the U.S. health care system.
- There have been significant challenges in identifying what constitutes emergency preparedness or what the core professional competencies are and whether they change by phase of or type of disaster.
- This study is proposed to begin to raise and document the answers to these questions by specifically addressing emergency preparedness and professional competency in responding to a hurricane

33

Proposed Timeline

- February 2007
  - Defend proposal
  - Request letters of support from organizational heads
  - Submit protocol amendment to IRB
- March – June 2007
  - Data collection-web survey
- July 2007
  - Complete analysis
- August 2007
  - Defend dissertation

34

Questions

35

Back Up Slides

36

Analysis Plan

	Question	Measurement		Outcomes
Clinical Skills	What are the most frequently occurring clinical skills performed by RNs?	Top 10	Descriptive	Frequencies Rank order
	What are the most frequently occurring clinical skills performed by MDs?	Top 10	Descriptive	Frequencies Rank order
	What is the perceived level of competence and training in clinical skills by RNs?	Likert Scale	Descriptive	Summary data Mean, mode, Median, SD, Variance
	What is the perceived level of competence and training in clinical skills by MDs?	Likert Scale	Descriptive	Summary data Mean, mode, Median, SD, Variance
	Are there items that appear on both the RNs and MDs Top Ten list		Descriptive	Describe average perceived competence for RNs and MDs on the items Describe average perceived training for RNs and MDs on the items
Triage	Is there a difference between RNs and MDs in their perceived competence in triage?		perceived competence in triage (DV) RNs and MDs (IV)	Independent T
	Is there a difference between RNs and MDs in their perceived training in triage?		perceived training in triage (DV) RNs and MDs (IV)	Independent T

37

Analysis Plan

Both	Are: work status, area of work, currency, usual place of employment, specialty, number of previous responses, member of a response group or member of a response group that requires training predictive of perceived competence		Perceived competence in basic clinical skills (DV Perceived competence in triage (DV) Work status-Full or part time (IV) Area of work-Rural, suburban, urban (IV), Currency (IV) Usual place of employment (IV) Specialty (IV) Number of previous responses (IV) Member of response group (IV) Member of a response group that requires training (IV)	Multiple Regression

38

You forwarded this message on 4/2/2008 5:01 PM.

Slepski, Lynn

From: Karen Elberson [kelberson@usuhs.mil] **Sent:** Sat 6/10/2006 1:30 PM
To: Lynn.Slepski@dhs.gov
Cc:
Subject: Re: Today's call
Attachments:

Lynn,

You have passed comps and are to complete the annotated bib as discussed. We will discuss timing for dissertation proposal defense. I will be available with Dr. Bienvenu on Tuesday. I believe the time is 1630. Is that correct? Thanks.

Dr. E.

Karen L. Elberson, PhD, RN
Associate Professor
Associate Dean & Doctoral Program Director
Uniformed Services University of the Health Sciences
School of Nursing
4301 Jones Bridge Road
Bethesda, Maryland 20814

Phone: (301) 295-1142 or (301) 295-3369
FAX (301) 295-1707 or (301) 295-9006
>>> "Slepski, Lynn" <Lynn.Slepski@dhs.gov> 06/09/06 9:23 PM >>>
Hi Dr. E

Thank you for calling today. I want to confirm that you told me that I had passed my comps, could schedule my defense and could continue to move forward towards dissertation. We are tentativly scheduled to meet Tuesday evening where we will discuss the "way forward".

I am looking forward to seeing you then...Thanks again...Lynn

CAPT Lynn A. Slepski, RN, MSN, CCNS
Senior Public Health Advisor
Department of Homeland Security
Washington, DC 20528

Email: Lynn.Slepski@dhs.gov
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Fax: (202) 282-8191
Pager (800) 918-6179

Sent from my BlackBerry Wireless Handheld

Original Committee Documents

Uniformed Services University of the Health Sciences
Graduate School of Nursing
Request for Appointment of Dissertation Chairperson (Form C)

Name of Student: CAPT Lynn Slepski

Semester: Spring 2007 Area of Concentration: Emergency Preparedness Competencies

Name of Selected Dissertation Chairperson: Dr. Karen L. Elberson

Phone Number: 301 295-3369

The above named student has selected the named faculty member to serve as Dissertation Chairperson.

The undersigned faculty member agrees to serve as the Dissertation Chairperson, understanding all responsibilities that are part of this critical role:

Karen L. Elberson — Karen L. Elberson
Printed Name — Signature

Lynn Slepski — Lynn A Slepski
Printed Name of Student — Signature

(Approval)/Disapproval

Signature: Karen Elberson Date: February 8, 2007
Karen Elberson, RN, PhD
Director, Doctoral Program

(Approval)/Disapproval

Signature: William T. Bester Date: February 8, 2007
William T. Bester, RN, MSN, CNAA, BC
Brigadier General (Ret)
Acting Dean, Graduate School of Nursing, USUHS

Uniformed Services University of the Health Sciences
Graduate School of Nursing
Request for Appointment of Dissertation Advisory Committee (Form D)

Name of Student: CAPT Lynn Slepski

Semester: Spring 2007 Area of Concentration Emergency Preparedness Competencies

Dissertation Chairperson: Dr. Karen L. Elberson

Selected Faculty to Serve as Dissertation Advisory Committee:

1. Robert Bienvenu II Phone # 301 260-7881
2. Patricia Hinton Walker Phone # 240 426-8268
3. Betsy Weiner Phone # 615 322-4639

The above named student has selected the named faculty members to serve as the Dissertation Advisory Committee.

The undersigned faculty members agree to serve as the Dissertation Advisory Committee, understanding all responsibilities that are part of this critical role:

Robert Bienvenu II — Printed Name of Faculty Member
Signature

Patricia Hinton Walker — Printed Name of Faculty Member
Signature

Betsy Weiner — Printed Name of Faculty Member
Signature

Lynn Slepski — Printed Name of Student
Signature

Approval/Disapproval

Signature: Karen Elberson Date: 08 February 2007
Karen Elberson, RN, PhD
Director, Doctoral Program

Approval/Disapproval

Signature: Date: 9 FEB 07
William T. Bester, RN, MSN, CNAA, BC
Brigadier General (Ret)
Acting Dean, Graduate School of Nursing, USUHS
Uniformed Services University of the Health Sciences

Graduate School of Nursing
Report of Proposal Defense Examination
for the Doctor of Philosophy Degree (Form E)

The proposal defense of CAPT Lynn Slepski,

entitled: *Emergency Preparedness and Professional Competency Among Health Care Providers During Hurricanes Katrina and Rita* was held

on February 8, 2007 from 1500 to 1600. The decision of the Examining Committee is:

PASS
A. Both the proposal and the oral explanation are satisfactory: _____

B. Minor changes are recommended by the Dissertation Advisory Committee and are to be made to the satisfaction of the Dissertation Chairperson: X

DEFER
A. Major changes in the proposal are required. Changes must be made to the satisfaction of the Dissertation Chairperson: _____

B. Major changes are required. Changes must be made to the satisfaction of the Dissertation Advisory Committee: _____

C. Remediation required prior to making major changes. Completion of remediation must meet the satisfaction of the Dissertation Advisory Committee: _____

FAIL
Neither the oral performance nor the proposal is adequate: _____

Signatures of the Committee

Chairperson: Karen L. Elberson

Member: _____

Member: _____

Member: Betsy Weiner

(Approval)/Disapproval

Signature: Karen Elberson Date: 08 February 2007
Karen Elberson, RN, PhD
Director, Doctoral Program

(Approval)/Disapproval

Signature: _____ Date: 9 FEB 07
William T. Bester, RN, MSN, CNAA, BC
Brigadier General (Ret)
Acting Dean, Graduate School of Nursing, USUHS

Current Committee Documents

Uniformed Services University of the Health Sciences
Graduate School of Nursing
Request for Appointment of Dissertation Chairperson (Form C)

Name of Student: CAPT Lynn Slepski

Semester: ~~Spring~~ Summer 2007 Area of Concentration: Emergency Preparedness Competencies

Name of Selected Dissertation Chairperson: Dr. Dorraine D. Watts

Phone Number: 727-483-9424

The above named student has selected the named faculty member to serve as Dissertation Chairperson.

The undersigned faculty member agrees to serve as the Dissertation Chairperson, understanding all responsibilities that are part of this critical role:

Dorraine D. Watts — Printed Name
Signature

Lynn A. Slepski — Printed Name of Student
Signature

Approval/Disapproval

Signature: _____ Date: September 17, 2007
Christine E. Kasper, PhD, RN, FAAN, FACSM
Acting Director, Doctoral Program

Approval/Disapproval

Signature: _____ Date: September 17, 2007
William T. Bester, RN, MSN, CNAA, BC
Brigadier General (Ret)
Acting Dean, Graduate School of Nursing, USUHS

Uniformed Services University of the Health Sciences
Graduate School of Nursing
Request for Appointment of Dissertation Advisory Committee (Form D)

Name of Student: CAPT Lynn Slepski

Semester: Spring 2007 Area of Concentration Emergency Preparedness Competencies

Dissertation Chairperson: Dr. Dorraine D. Watts

Selected Faculty to Serve as Dissertation Advisory Committee:

1. Dr. Dorraine D. Watts Phone # 727-483-9424
2. Dr. Christine E. Kasper Phone # 301-295-1092
3. Dr. Betsy Weiner Phone # 615 322-4639

The above named student has selected the named faculty members to serve as the Dissertation Advisory Committee.

The undersigned faculty members agree to serve as the Dissertation Advisory Committee, understanding all responsibilities that are part of this critical role:

Dorraine D. Watts — Printed Name of Faculty Member
Signature

Christine E. Kasper — Printed Name of Faculty Member
Signature

Betsy Weiner — Printed Name of Faculty Member
Signature

Lynn A. Slepski — Printed Name of Student
Signature

Approval/Disapproval

Signature: Date: 9/17/07

Christine E. Kasper, PhD, RN, FAAN, FACSM
Acting Director, Doctoral Program

Approval/Disapproval

Signature: Date: 9/18/07

William T. Bester, RN, MSN, CNAA, BC
Brigadier General (Ret)
Acting Dean, Graduate School of Nursing, USUHS
Uniformed Services University of the Health Sciences

Emergency Preparedness and Professional Competency Among Health Care Providers During Hurricanes Katrina and Rita: Pilot Study Results

Lynn A. Slepski, RN, MSN, PhD (c), CCNS

Background: To date, no systematic examination of the preparedness of individual health care providers and their response capabilities during a large-scale disaster has been conducted. As a result, very little is known about what knowledge, skills and abilities, or *professional competencies* are needed, or how professional competency requirements may change depending on the circumstances of a disaster. The objective of this pilot study was to collect, explore, and describe background data on professional competencies from health care providers who were involved in the Hurricanes Katrina and/or Rita disaster responses.

Methods: Utilizing an anonymous survey of a convenience sample, 200 health care providers attending 2 disaster conferences were asked to respond to open-ended questions about the competencies they needed and performed during their disaster response.

Results: Of the 200 respondents, registered nurses (37%) and physicians (24%) were the largest categories of providers. Basic clinical care (39%) and triage (26%) were the most frequent response skills reported; the areas wherein respondents felt least prepared were disaster-specific response skills (22%) and systems issues (34%). Only 22% of respondents reported that they did not know a specific skill. The 200 respondents made 495 individual recommendations for future responders, including actions to improve the respondent's personal preparedness (23%) and the need for training (25%). However, only 3% of the recommendations (n = 15) actually identified a specific type of training such as Advanced Cardiac Life Support or triage.

Conclusion: Few respondents reported knowledge deficits. Rather, what they described was an abrupt change or transition from their everyday practice worlds that required accommodation in order to practice effectively. Current training programs generally focus on providing skills information. Further research is required to determine if training programs should address facilitating the transition process.

In September 2005, Hurricane Katrina, a category 5 hurricane, and Hurricane Rita, a category 4 hurricane, affected more than 1.5 million people located within approximately 90,000 square miles spanning the states of Louisiana, Mississippi, and Alabama. As a result, more than 770,000 persons were displaced, with 89,000 persons (11.5%) evacuated to makeshift shelters. National response plans and annexes call for the establishment of alternative, nonhospital, field medical facilities, staffed by volunteers, to treat thousands of victims of large-scale events. Federal planners assume that trained and competent health care workers will volunteer to staff these facilities, yet no studies have addressed whether volunteers are prepared and/or competent to function in these roles. Hurricanes Katrina and Rita were the first real tests of this alternative, nonhospital concept. According to most people, the system stumbled or failed.[1]

Up to this time, no systematic examination of the preparedness of health care providers and their response capabilities during the individual phases of a large-scale response has occurred. As a consequence, very little is known about what knowledge, skills, and abilities or professional competencies are needed or if these competencies change in each disaster phase. This information is critical in designing effective national response plans and future training content. Thus, to evaluate these possibilities, this pilot study was designed to initiate an examination of the specific professional competencies that were important to the response of health care providers during these disaster situations.

CAPT Lynn A. Slepski is a PhD candidate, United States Public Health Service, Graduate School of Nursing, Uniformed Services University of the Health Sciences, Gaithersburg, Md.

The views expressed here are the work of the author and do not represent the official policy of the Uniformed Services University of the Health Sciences or the United States Government.

Reprints are not available from the author.

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Review of the Literature

Emergency Preparedness

A key concept in disaster management and planning is "emergency preparedness." Although the concept frequently is referred to within medical literature, psychological literature, and local, state and federal documents, this term is not well defined. Similarly, emergency preparedness training remains inadequately delineated. Turnock[2] best summed up the lack of consensus of a definition of emergency preparedness as follows: "Currently, states are not clear about what is meant by preparedness and how it can be measured and recognized. In this definitional vacuum, states are left to fend for themselves, resulting in uneven and inconsistent approaches from state to state and from locality to locality within states" (p. 31).

Recently, Slepski[3] published a concept analysis of the term "emergency preparedness," intended as a base for the development of specific competencies. Based on the results of the concept analysis, Slepski defined emergency preparedness as "the comprehensive knowledge, skills, abilities and actions needed to prepare for and respond to threatened, actual or suspected chemical, biological, radiological, nuclear or explosive incidents, man-made incidents, natural disasters or other related events" (p. 426).

Emergency Preparedness Training

Education and workforce training goals and strategies for emergency preparedness vary widely.[4] No standards are clearly defined, and guidelines for emergency preparedness training do not exist.[5-9] According to Waeckerle,[10] no single authoritative source or approved body of emergency preparedness content or curriculum has been sanctioned. Thus, training and educational efforts lack standardization. Waeckerle also noted that no program or policy office has been established or designated to integrate federal programs for emergency preparedness-related assistance and to provide guidance to states and local communities.[10]

Competency

In a seminal work on competency assessment, Wright[11] defined core competencies as the "knowledge, skills, abilities, and behaviors needed to carry out a job" (p. 7). Therefore, possession of appropriate competencies ultimately fulfills the organizational, departmental, and work setting requirements under the varied circumstances of the real world. Core competencies are based on key essential job functions, frequently used job functions and accountabilities, and high-risk job functions and accountabilities that involve actions that could cause harm, death, or legal actions to customers, employees, or the organization. Competencies are articulated in competency statements that are measurable.

In the absence of federal criteria, several groups have independently attempted to develop core competencies for a variety of responders without any attempts to harmonize them across the many types of emergency responders. The groups addressing health care include EMTs, emergency physicians, and emergency nurses,[12] emergency response clinicians,[13] hospital workers,[14] and public health workers.[14,15] The entities specifically addressing nursing include the Columbia School of Nursing (public health and hospital nurses),[14] the Association of Teachers of Preventive Medicine (advanced practice nurses),[16] and the International Nursing Coalition for Mass Casualty Education (general nurses).[17] Unfortunately, the vision and resulting competency requirements are inconsistent across the groups (Table 1). Further, no attempt has been made to validate if these competencies are appropriate and comprehensive.

Gaps in the Literature

The term "emergency preparedness" is a new dimension in the continuum of health care and public health services that has emerged without any explication. Few research studies explore emergency preparedness or professional competency in any provider type. Most of the work in this area remains unreported in the literature and is known only through anecdotal information and preliminary reports at conferences. Despite billions of dollars being expended annually, a paucity of research exists to demonstrate that health care responders are adequately prepared, that existing emergency preparedness training addresses appropriate professional competency requirements, or that training is even effective. Because emergency preparedness is new to investigation, few specific research tools have been established. To date, none of the existing core competency sets have been tested for validity. As a result, very little is known about what knowledge, skills, and abilities are needed. Consequently, the gaps in science to support this increasingly important component of care are considerable. Gebbie and Qureshi[18] suggest that "the first step toward emergency preparedness is the identification of ***who*** needs to know ***how*** to do ***what***" (p. 50, emphasis added). The current study was done to begin to identify research questions and to document the answers to these research questions by specifically addressing emergency preparedness and professional competency in responding to a hurricane.

Purpose

The objective of this pilot study was to begin to explore, describe, and collect background data on professional competencies from health care providers

Table 1. Examples of existing health care provider comp

Generic	Physicians/EMTs (OEP/ACEP)[12]	Registered nurses (INCME)[17]	Public health professionals (CDC)[15]
1. Prioritize and allocate scarce resources 2. Assess and sort patients according to their need for medical care	1. Explain how treatment in place and use of alternative care facilities might be used 2. Practice safety-first to avoid becoming a victim 3. Recognize the triggers that precipitate reporting and investigation of suspected terrorist events 4. Demonstrate proper use of personal protective equipment	1. Perform an age-appropriate health assessment 2. Demonstrate the safe administration of medicines 3. Implement fluid/nutrition therapy 4. Transport a patient safely through splinting, immobilization, monitoring and therapeutic interventions	1. Describe the public health role in emergency response in a range of emergencies 2. Apply professional skills to a range of emergency situations 3. Correctly use communication equipment 4. Describe the chain of command and management system

ACEP, American College of Emergency Physicians; *CDC*, Centers for Disease Control and Prevention; *INCME*, International Nursing Coalition for Mass Casualty Education; *OEP*, Office of Emergency Preparedness, Department of Health and Human Services.

who were involved in the Katrina and/or Rita disaster responses. Data obtained from this preliminary study will form the basis for design of a larger Web-based survey to assess the issue of individual health care provider preparedness at the time of Katrina/Rita and elucidate pathways to better performance in the future.

Methods

This exploratory descriptive study utilized a convenience sample of health care providers aged 18 years or older who worked on site in a disaster response for Hurricane Katrina and/or Rita in Alabama, Louisiana, or Mississippi. Respondents either attended the 2006 National Disaster Medical System (NDMS) or U.S. Public Health Service (USPHS) annual conferences, sites where large numbers of health care providers deployed to areas hit by the hurricanes. Individuals who chose to participate completed the survey and placed it in a collection box. The collection box was located near a poster containing a study description and a request for voluntary participation. The study was reviewed and approved by the Institutional Review Board of the Uniformed Services University of the Health Sciences.

Instrument

In the absence of an existing tool, an anonymous survey was constructed that included one page of basic demographic information, intended to elicit information to describe the responder pool, as well as 3 open-ended questions about emergency preparedness competencies. Respondents were asked (1) the 3 competencies the provider performed with the greatest frequency during the hurricane response; (2) the 3 areas in which the provider felt least prepared to respond; and (3) the 3 recommendations the provider would make to someone preparing to respond to a similar event. Included on the sheet were examples of both generic and provider-specific competencies. A definition of the term "competency" and examples were included to provide the respondent with a better understanding of the term. The 2-page survey (Figure 1) was designed to begin to describe responder types, to document competencies needed for hurricane response, and to be completed in 20 minutes or less.

Analysis Procedures

Demographic and quantitative information containing numeric data were summarized and presented using frequencies, simple measures of central tendency (means, medians, and modes), and percentiles for categorical variables. Qualitative data were analyzed using the 10-step hermeneutical approach of Streubert.[19] The approach entails examination of the general patterns moving from an individual participant's description to the researcher's synthesis of all participants' descriptions. Then the principal investigator reviewed and condensed the data by categorizing or narrowing data into domains and themes.[20] Each unit of

Emergency Preparedness and Professional Competency Among Healthcare Providers During Hurricanes Katrina and Rita

The information that you provide on the following survey is strictly **anonymous** and **voluntary**. Your responses will not be associated with you or your response organization and will be used to inform a future web-based survey that will address professional competency and emergency preparedness among healthcare providers during Hurricane Katrina and Rita.

Demographic Information:

1. Are you a Healthcare Provider? Y N If yes, please **circle** your role

MD Physician's Assistant Nurse Practitioner/Advance practice nurse

RN LVN/LPN EMT/Paramedic

Dentist Other (please describe)_____

2. Number of years experience in your healthcare provider role_____ years.

3. Did you respond to Hurricane Katrina or Hurricane Rita? **(circle)**Katrina Rita Both No

4. Did you live in the immediate Hurricane Katrina or Hurricane Rita area (within 100 miles)? **(circle)** Y N

5. Dates of your response(s): Please provide the dates for **each** response if more than one.

1. From: mo/day_____ 2. From: mo/day_____ 3. From: mo/day_____

To: mo/day_____ To: mo/day_____ To: mo/day_____

6. City/State(s) where you responded? Please provide the city/state for **each** response if more than one.

1. City_____ 2. City_____ 3. City_____

State_____ State_____ State_____

7. What was your response experience at the time of Hurricane Katrina or Hurricane Rita? **(circle)**

First emergency response

1-4 emergency responses prior Katrina or Rita

5 or more emergency responses prior to Katrina or Rita

8. Are you a member of an organized response group? Y N If yes, please **circle**:

American Red Cross Health and Human Services Volunteer

Medical Reserve Corps National Disaster Medical System

US Public Health Service Other:_____

Phase I Survey Instrument (Back)

1. During your Katrina or Rita response, name the 3 response skills (competencies) that you performed with the greatest regularity.

a. _____
b. _____
c. _____

2. In thinking back to your Katrina or Rita experience and all of the issues that you encountered, in what 3 areas did you feel the least prepared to respond?

a. _____
b. _____
c. _____

3. If you could tell or recommend three things to someone preparing to respond to a similar disaster, what would they be?

a. _____
b. _____
c. _____

****

Figure 1: Phase I anonymous survey instrument. *ACEP*, American College of Emergency Physicians; *CDC*, Centers for Disease Control and Prevention; *EMT*, emergency medical technician; *INCME*, International Nursing Coalition for Mass Casualty Education; *LPN*, licensed practical nurse; *LVN*, licensed vocational nurse; *MD*, medical doctor; *OEP*, Office of Emergency Preparedness, Department of Health and Human Services; *RN*, registered nurse.

Training requirements in many response organizations are often framed in terms of competencies. A competency is defined as: the knowledge, skills and abilities needed to carry out a job. Some examples of emergency preparedness competencies are included as a reference to guide your responses. Generic competencies include:

Prioritize and allocate scarce resources.

Assess and sort patients according to their need for medical care.

Some provider-specific competencies are included as a reference to guide your response above

Physicians/EMTs (OEP/ACEP)12	Registered Nurses (INCME)17	Public Health Professionals (CDC)15
1. Explain how treatment in place and use of alternative care facilities might be used. 2. Practice safety-first to avoid becoming a victim. 3. Recognize the triggers that precipitate reporting and investigation of suspected terrorist events. 4. Demonstrate proper use of Personal Protective Equipment (PPE).	1. Perform an age-appropriate health assessment. 2. Demonstrate the safe administration of medicines. 3. Implement fluid/nutrition therapy. 4. Transport a patient safely through splinting, immobilization, monitoring and therapeutic interventions.	1. Describe the public health role in emergency response in a range of emergencies. 2. Apply professional skills to a range of emergency situations. 3. Correctly use communication equipment. 4. Describe the chain of command and management system

Figure 1: (Continued)

information was compared with previous units, coded, categorized, linked, expanded, and reduced until domains, themes, and subthemes developed.

Only 22% of respondents reported that they did not know a specific skill. It is notable that responders described an abrupt change or transition from their every day practice worlds.

Results

Of the 200 participants in this study, the largest categories of respondents were registered nurses (RNs) (37%) and physicians (24%). Other respondents included EMTs (10%), advanced practice nurses (8. 5%), physician assistants (5%), dentists (3%), and licensed vocational/ practical nurses (1.5%). Self-reported years of experience in their health care provider role ranged from 2 to 50 years, with the average being 19.5 years (SD 9.5), and the mode being 15 years (7.5%). One hundred thirteen (56.5%) providers responded to Hurricane Katrina, 12 (6.0%) responded to Hurricane Rita, and 75 (37.5%) responded to both. Only 16 (8%) lived within 100 miles of the response event. The majority of responders (94%) deployed as part of an organized team. Of the teams identified, the largest responding teams were the NDMS (48%) and the USPHS (36%). Seventy-nine (40%) of the subjects reported that the hurricane was their first emergency response, compared with 38% who reported having 1 to 4 prior responses and 23% who had 5 or more prior responses. Although no individual was told in advance how long he or she would be needed, response periods ranged from 1 to 244 days, with the average response lasting 15 days. Sixty respondents (30%) reported 2 or more responses to this disaster, while 15 respondents (7.5%) reported 3 or more responses. Eleven persons (5.5%) reported 2 consecutive responses ranging from 13 to 272 days.

Basic clinical care (39%) and triage (26%) were the two most frequent response skills reported (Table 2). The number of competencies reported by participants ranged from 6 competencies for licensed practical or vocational nurses to 21 competencies for RNs. Basic clinical care was identified across all health care provider categories, whereas communications and support to a Disaster Mortician Response Team were reported only by dentists.

When asked to list the 3 areas where the respondent felt least prepared, responses could be grouped into the following categories: expectations (what they thought/ did not think would happen); organization (how things were organized/fit together); personal; resources; scope (how large the event became); specific skills; systems issues (not knowing role/who partners were/ how to replace supplies/lack of communication and information), and other (Table 3). The responses clustered around 3 specific thematic areas: (1) the responder as a person; (2) the physical environment; and (3) the social environment. Only 22% of respondents reported that they did not know a specific skill. It is notable

Table 2. Competency frequency by provider type (only health care providers)

	Provider type							
Competency	**MD**	**PA**	**NP/APN**	**RN**	**LVN/LPN**	**EMT/paramedic**	**Dentist**	**Total**
Administration	20	2	7	28	3	7	4	71
Air evacuation	2			1				3
Assessment	7	3	7	20		4		41
Basic clinical care	29	6	13	23	2	7	1	81
Communications	2			3			1	6
Disaster Mortuary Operational Response Team support							7	7
Education				4		1		5
Epidemiology	9							9
Immunizations	1		3	13	1	3		21
Liaison			1	11		1	1	14
Logistics		1	1	6	1	5	1	15
Medication administration			1	6				7
Mental health	8	1		7	1	2	1	20
Needs assessment	1	1		4				6
Patient transport								
Pharmacology	4	2	2	3				11
Preventive medicine	2					1		3
Respiratory care	1			4		1		6
Resuscitation	6	1	2	14		3		26
Safety				1		3		4
Site set up		1		1			1	3
Special needs	3		1	2	1			7
Triage	13	2	4	26		5	1	51
Wound care	7	1	3	10		6		27
Other	12	2	2	12		6		34
TOTAL	17	12	13	21	6	15	9	

APN, Advanced practice nurse; *EMT*, emergency medical technician; *LPN*, licensed practical nurse; *LVN*, licensed vocational nurse; *MD*, medical doctor; *NP*, nurse practitioner; *PA*, physician's assistant; *RN*, registered nurse.

that responders described an *abrupt change or transition from their every day practice worlds*. Respondents described a period of acclimatization where they needed to learn about the people and the physical and social environments around them. One respondent describe the process as "getting to know the lay of the land" and "operating with a whole new set of 'rules.'"

The 200 respondents made 495 specific recommendations, including attributes or attitudes that a responder should have, what to pack, actions to improve personal preparedness or self care, systems issues, and training (Table 4). In fact, only 25% (n = 123) actually recommended training, of which only 3% (n = 15) recommended a specific type of health care training such as Advanced Cardiac Life Support (ACLS) or triage. Instead, respondents recommended *actions that improved them personally or as a member of their team or larger response group*.

Discussion

Demographics

The responder categories in this study are consistent with anecdotal reports. The sample group was composed of experienced health care providers. Because the majority of providers reported 15 or more years of experience in their health care provider role, one could expect that many individuals would have both basic clinical care and triage well incorporated into their skill sets. More importantly, nearly 60% of the group reported that they had prior experience with disaster responses. More than 85% reportedly came from teams who required training prior to responding. Responses varied by amount of self-reported previous disaster response experience (Table 5).

First-time Responders

First-time responders comprised nearly 40% of the sample (n = 79). The largest quartile (n = 29 or 36. 7%) had 11 to 20 years of experience. Nine individuals (11.4%) arrived on their own, and an additional 2 arrived as part of the response team formed by Health and Human Services. Neither of these groups (n = 11 or 14%) had the benefit of team training.

In order of frequency, new responders were more likely to perform basic clinical care (n = 38), assessments (21), triage (20), administrative duties (20), and then mental health activities (16). New responders

were least likely to assist with care of the dead (n = 0), air evacuation (n = 1), communications (n = 1), preventive medicine activities (n = 1), or site set up (n = 0)—activities that generally require advance training.

First-time responders indicated that they felt least prepared in the areas of skills and functioning within the "systems" and organizations that existed. Often without any real-time communication with the outside, first timers failed to understand frequently changing priorities, acronyms, and requirements for paperwork or the processes needed to make things run smoother, for example, how to order supplies. Their organizational concerns centered on understanding how the different groups fit together, chain of command, mission assignments, and flow of information. Overall, the new responders were unprepared for the amount of devastation, volumes of patients and their levels of acuity, and requirements for sustaining large numbers of persons with food and water. Novice responders did not expect that they would be working long hours with limited supplies or that they would encounter hostile victims needing their care. They were surprised by the prolonged lulls in the action where they "waited around." Skill concerns centered around the scale of the event—how to accomplish triage for large numbers of persons at a time, developing substitutions for drugs or treatments not available, meeting the mental health requirements of this vulnerable population, and becoming adept at using new field-based equipment like portable labs and oxygen concentrators. Unfamiliar with field conditions, novices sought out the mechanical equipment usually found in their practice areas, like infusion pumps and nebulizer machines and preferred "appropriate" casting materials over immobilization through other means. Personal issues revolved around what to bring with them.

For recommendations, new responders addressed the attributes of remaining flexible, patient, and positive. In terms of personal preparedness, they thought it was important to set realistic expectations about duty hours and the amount of sleep likely. Several respondents mentioned the need to be personally ready by careful selection and prepacking of personal gear as well as ensuring that their families were equally prepared, knowing that frequent calls home were unlikely and that those left at home needed to be able to be "on their own." Self-care addressed pacing work/rest cycles, getting sufficient sleep, and taking actions such as good hydration to avoid becoming a victim. Packing recommendations included the use of a "pack list" because several members found themselves without needed items. Training recommendations included knowledge and application of the National Incident Management System and the National Response Plan, as well as "how to perform with minimum of resources" described by one respondent as "primal medicine—think no pumps."

Moderately Experienced Responders (1-4 Responses)

Moderately experienced responders numbered 75 and comprised nearly 38% of the sample. The largest quartile (n = 29 or 38.7%) had 11 to 20 years of experience. Only 1 person within this category had responded on his or her own, while 68 or 90.6% had responded as a member of a group requiring training.

In order of frequency, moderately experienced responders were more likely to perform administrative duties (n = 32), basic clinical care (n = 29), triage (n = 25), and assessment (n = 16). They were less likely to perform preventive medicine (n = 0) and site safety (n = 0) activities, air evacuation (n = 1), site set up (n = 1), care of special needs populations (n = 1) or needs assessments (n = 1). More often than not, the moderately experienced responder was supervising others.

Despite their experience, this group reported concerns regarding the length of duty hours, the patient-to-provider ratios, difficulty in identifying where to transfer patients to the next level of care, as well as the number of victims needing mental health services. They too acknowledged the overwhelming numbers of patients and number of traumatic injuries as challenging. They identified concerns with providing services to population mixes outside of their normal areas of practice, such as orthopedic, pediatric, and geriatric patients. Personal issues addressed not becoming a victim and taking care of family. Their greatest concerns centered on "systems." Already experienced with how things "should work," they cited poor management, absence of communication, inadequate supplies, and friction between response groups as obstacles encountered on a daily basis. Organizationally they had difficulty establishing and maintaining linkages between federal, state, and local entities. This group looked for opportunities to identify systems of resources—referral sites and community "help" agencies. They were concerned with meeting the basic food and water needs of their patients and staffs.

Recommendations from this group centered on group or team issues. For example, this group expressed the need to "be supportive of team mates" and have "good relationship skills." More accustomed to the response environment, personal preparedness issues of these providers addressed being self-sustaining for at least 48 hours in an austere environment. Their self-care recommendations addressed rest, exercise, diet, and maintaining a good attitude. These moderately experienced responders had concrete examples of what to bring for clothing, tools, instruments and references—most included a sleeping bag, which many of the novices did not know to bring. This group recognized the need for hands-on

Table 3. Reported areas where respondents felt least prepared (N = 376)

	Person	Physical environment	Social environment
Expectation (n = 28)	• Work hours (24/7, long hours, no breaks) • Waiting around • Doing clerical work • Lack of sleep • Rotating shifts	• Being sent into an unsafe situation • Severe danger	• Hostile public contact • Only medical provider for 500 patients • Chaos • Bureaucracy
Organization (n = 34)			• Organization (Incident CommandSystem [8]) • Management Command Team • Chain of command (8) • Federal/state/local interface
Personal (n = 19)	• Did not know what to bring (7) • Notifying employer • Measures to avoid becoming a victim • Not bringing personal professional equipment		• Not knowing team • Communicating with and providing support to my family
Resources (n = 26)	• Not having the right clothing to wear	• Lack of food/clean water, equipment, medications • Patient transportation out	• Lack of discharge planning • Identifying remaining community resources
Scope (n = 34)	• Working with affected children, affected elderly • Critical care requirements	• Storage of deceased • Smell of death	• Mental health issues (15) • Major trauma • Mass care/volumes of care • No. of dead
Skill (n = 82)	• Ventilator care • Casting • Suturing • How to use PPE • IV access/ therapy • Patient specialties (pediatric, obstetrics/ gynecology, COPD) • How to "make do" without equipment • Specific equipment (eg, O_2 concentrator, 5 brands of glucose monitors)	• Putting up a tent • Food/galley inspections • Environmental assessments • Setting up a shelter	• Speaking with grieving families • Emotional needs of people • Community assessments • Keeping families together

Table 3 (continued)

System issues (n = 126)	• Lack of "team" • Not knowing deployment role before they left	• Lack of communication (phones down) • Safety/security issues • Poor living conditions
Other (n = 5)		• Lack of current situation/information • How to replace supplies • Who partner organizations were • Getting partners to work well together • "Inefficient medical providers" • Lack of interpreters • Wrong provider skill mix • Formulary wasn't large enough—providers weren't familiar with drugs • Lack of mental health resources • No standard documentation • Responding to questions from victims for which there was no answer • What happened after I returned home

COPD, Chronic obstructive pulmonary disease; *PPD*, personal protective devices.
n = the frequency of multiple responses.

training as well as the need to fit into the overall command structure; as a result, a majority of their training recommendations centered on the NRP, National Incident Management System, and having a "strong background in the joint interoperability environment."

The very experienced responder…group had the greatest concerns with "systems issues" such as communication failures, ineffective working relationships, disregard for chain of command, and even the politics and "red tape" required to "do the right thing."

Very Experienced Responders (5 or More Responses)

Only 45 persons (23%) met the criteria of very experienced responders. The largest quartile (n = 18 or 40%) had 21 to 30 years of experience. In order of frequency, very experienced responders performed basic clinical care (n = 24), administrative duties (n = 15), or triage (n = 11). This group was selected to provide on-the-job training to others as well as to function as liaisons to other entities, although establishing and maintaining coordination relationships with these entities were cited as difficult. More often than not, this group helped with site selection rather than the actual set up.

Because of their experience, this group had the greatest concerns with "systems issues" such as communication failures, ineffective working relationships, disregard for chain of command, and even the politics and "red tape" required to "do the right thing." They had fewer concerns with expectations, for example, only citing the perception of personal danger as an issue, or personal issues of dealing with their own frustrations and time management. Even these well-seasoned responders noted the high volumes of patients, especially those with mental health needs, as unforeseen. Their skill concerns centered on the inability to transfer out persons needing intensive care or to make substitutions when drugs were not available. This group also cited speaking to the media as an uncomfortable requirement. Resource issues surrounded tracking of patients and their families, levels of supplies, and identifying resupply mechanisms.

Recommendations from this group centered on the mission and knowing the strengths and weaknesses of team members. Self-care extended beyond the provider to enforcing work and rest cycles for the group. This group's packing recommendations went to a greater level of granularity, for example, sunscreen and specific reference books, but also addressed the need to "keep loads light." Training recommendations

Table 4. Recommendations for future responders (N = 495)

Category of response	n	Examples of responses
Attributes or attitudes	105	• Included the term "flexible," ie, "be flexible" (59) • Be patient • Have a sense of humor
What to pack	66	• Have a pack list to remember everything • Bring moleskin • Bring your own food and water • Equipment for the worse case/austere environment
Personal preparedness	115	• Prepare yourself mentally to deal with austere conditions • Prepare my family for their hardships; sign medical power for kids • Find out as much as you can about where you are going/doing • Be ready for anything—be prepared to work in a different role
Self-care	26	• Make sure you eat and keep hydrated • Prioritize work/rest periods for yourself and subordinates
System issues	60	• Small library of medical references • Standardized forms and reports/ report schedules • Protocols and standard operating procedures
Training	123	• Drill and exercise (9) • Nonmedical topics—environmental health issues/ ICS/ NRP (19) • Field experience—low/no technology (4) • Get specific training (15) – ACLS (4) – Basic skills (1) – First aid (2) – Suturing (1) – Triage (5) – Wound care (2)

ACLS, Advanced cardiac life support; *ICS*, Incident Command System; *NRP*, national response plan.

centered on improving hands-on clinical skills and group training to improve effectiveness.

…many providers reported that they were employed in roles outside of their usual provider roles or were asked to work with populations such as pediatrics or geriatrics to which they were not accustomed.

Similarities

All 3 groups identified the need to "be flexible" about roles, needs, schedules, and expectations. While first timers seemed unaware that missions would change and that "it is OK not knowing what you will be doing next,"in contrast, more experienced responders emphasized the need to have patience, be adaptable, and work without direction. Not surprisingly, many providers reported that they were employed in roles outside of their usual provider roles or were asked to work with populations such as pediatrics or geriatrics to which they were not accustomed.

Packing recommendations included bringing supplies of food and water, specific articles of clothing (cotton layers), equipment (personal stethoscope and references), personal hygiene items (hand sanitizer and moleskin, which is used to treat blisters from footwear), and comfort items (cell phone and "down time" materials such as books or playing cards).

System issues concerned the communication network and support infrastructure. Frequently mentioned were the flow of supplies, communications and information, safety concerns, and adherence to the chain of command. Several respondents recommended expanding the scope of practice and the development of processes such as treatment protocols, standard operating procedures, and record-keeping systems.

Emerging Themes

Responses could be grouped into 3 thematic areas—the responder as a person; the responder in the physical environment; and the responder as part of a social environment. The responder as a person addressed the needs of the individual. Included in this area were issues affecting the responder such as work hours, lack of sleep, knowing what to bring, and required

Table 5. Comparison of responses by responder experience levels

	First time (n = 79)	Moderately experienced—1-4 responses (n = 75)	Very experienced—5 or more responses (n = 45)
Training	86% belonged to a group that required training	91% belonged to a group that required training	100% belonged to a group that required training
Competency performed by frequency	• Basic clinical care (38) • Assessments (21) • Triage (20) • Administrative duties (20) • Mental health (16)	• Administrative duties (32) • Basic clinical care (29) • Triage (25) • Assessments (16) • Supervised others	• Basic clinical care (24) • Administrative duties (15) • Triage (11) • Provided on-the-job training to others
Least prepared for	• Skills • Amount of devastation • Volumes of patients and their acuity levels • "Waiting around"	• Length of duty hours • Patient-provider ratios • Providing services to population mixes outside their normal practice area	• Politics and "red tape" • Speaking with the media • Volumes of patients requiring mental health services
Organizational concerns	• How different groups fit together • Chain of command • Mission assignments • Flow of information	• Establishing and maintaining linkages between federal, state and local entities	• Communication failures • Ineffective working relationships
Overall concerns	• Frequently changing priorities • Functioning within "systems" • Functioning in an austere environment	• Poor management • Absence of communication • Inadequate supplies • Friction between responder groups	• Doing the "right thing" • Getting patients to the right level of care • Re-supply mechanisms

clinical skills. The physical environment refers to the setting where the event took place and included all of the characteristics of that setting. Included in this area were living conditions and the absence of food, clean water, and equipment. Finally, the social environment took into account all of the social and legal norms and cultures that had an influence on the event. Included in this area were chain of command, the incident command system, mental health issues, keeping families from being separated, and speaking with grieving families.

Limitations of This Pilot Study

Use of a convenience sample of one event of responders limits the applicability of this study to the larger population of all emergency preparedness responders. Responders from different organizations may come with different backgrounds, experience, and expectations, making comparison difficult. Use of 2 conferences where hurricane responders were likely to attend may have resulted in persons with "self-selected" roles. In some instances, small numbers in responder types made further subdivision impossible to have a meaningful representative sample (EMTs and EMT-Ps), so groups were combined, although skill sets and role expectations could be different. However, the inclusion of multiple types of providers plus multiple locations of response sites increased the amount of information obtained and may demonstrate consistent themes to begin to provide a general base for understanding the phenomenon of emergency response. Because these data are the result of a pilot study, a larger study with a more inclusive questionnaire might reveal richer data. Secondly, this pilot took place approximately 10 months after the event. Disaster research is difficult to accomplish. Several authors[21,22] suggest that research focused on disaster situations often must be performed retrospectively to improve care and prevent repeated mistakes.

Conclusions

While the risk of a catastrophic event occurring in the United States is always present, never has an event of similar scope ever happened. The death and destruction resulting from Hurricanes Katrina and Rita triggered the largest natural disaster relief and recovery operations in United States history and created an unprecedented demand for relief health care services.

The objective of this pilot study was to begin to explore, describe, and collect background data on professional competencies from health care providers

who were involved in the Katrina and/or Rita disaster responses. Preliminary data collected in this study begins to offer a general base for understanding the phenomenon of emergency response by providing background data on health care providers and their professional competencies from responders who were involved in these disaster responses and forms the foundation for a Phase II study by identifying the largest groups of provider types and most frequently accomplished competencies. In this sample of health care providers, surprisingly, only 22% of respondents reported that they did not know a specific skill. Rather, what responders described was an abrupt change or transition from their everyday practice worlds that required accommodation in order to practice effectively, pointing to the need for further examination of the transition process.

There are no metrics that validate if existing emergency preparedness competencies are appropriate and all-encompassing, if current training addresses appropriate professional competency requirements, or that training is even effective. This author believes that current training programs generally focus on providing only skills information rather than preparing responders for the anticipated changes that responding to emergency may involve. Without this preparation, even the most skilled provider taken out of his or her usual practice element may encounter problems. As a result, changes to training programs may be warranted.

Disaster research is in its infancy. Little is actually documented about this phenomenon. Further research is needed to better understand not only specific competencies such as basic clinical care and triage, but more importantly, the transitions experienced by providers in this venue. To accomplish this research agenda, one must first determine what emergency preparedness professional competencies are—what knowledge, skills, and abilities are needed, for example, in a hurricane response, a disaster that occurs each year. Subsequent studies might address whether these professional competencies and transitions are the same or different in different stages or in other types of emergency response.

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Emergency Preparedness: Concept Development for Nursing Practice

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Never before has the United States been so focused on improving its ability to respond to acts of terrorism. Ever since images appeared of commercial airliners driving into the World Trade Center and the Pentagon, Americans have felt vulnerable. US leaders, and leaders of other nations, have expressed great concern about levels of emergency preparedness, recognizing that large-scale events carry the potential for disastrous public health consequences. The threat of a large-scale incident is significant, and the United States remains dangerously unprepared. Recent terror events have killed thousands, placing the government's public health infrastructure under unprecedented scrutiny. These events highlight the need to connect the spheres of health care and emergency preparedness to each other and to the public. Emergency preparedness has become a national priority, and the federal government has responded by investing billions of dollars in preparedness.

Health care professionals have an obligation to treat as many victims with a chance of survival as possible during emergencies, but have they been lulled into complacency by the infrequency of events? Hospital personnel, those who face the challenge of organizing and implementing a plan to treat large numbers of casualties, have significant gaps in emergency preparedness knowledge and skills. Health care facilities are an essential component of the emergency response system, but they are poorly prepared for large-scale events. Finally, in most areas of the county, comprehensive community-wide emergency preparedness programs remain under development.

An intriguing situation has emerged. Weaknesses in the nation's preparedness, including many in the health sector, are being described and documented. Organizations are taking measures to improve preparedness. Colleges and universities are establishing new programs in various aspects of emergency preparedness and expanding current programs. But the target is not clear. What exactly is emergency preparedness?

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THE CONCEPT OF EMERGENCY PREPAREDNESS

Emergency preparedness is addressed frequently in the health care and social sciences literature, and in local, state, and federal documents, but the concept is not defined well. The purpose of this concept analysis is to examine and clarify the concept of emergency preparedness, especially as it applies to nursing. Currently, no conceptual analysis of the phenomena of emergency preparedness exists. The concept will be reviewed in accordance with the Walker and Avant concept analysis technique [1].

LITERATURE REVIEW

The terrorist attacks in September 2001 and the subsequent anthrax attacks exposed weaknesses in the public health infrastructure and drew US policymakers' attention to the need for strengthened public health emergency preparedness at the local level [2]. As a result, several groups are examining the issues and implementing programs aimed at enhancing response capability [3].

The term emergency preparedness has been used as the basis for individual, local, state, and national preparedness plans aimed at enhancing readiness, increasing the ability to respond to large numbers of casualties by creating surge capacity, and improving the response to terrorism and other public health emergencies. The achievement of emergency preparedness takes place through a process that involves planning, training, and practicing skills through exercises, in addition to procuring equipment [4]. The federal government, in conjunction with state and local authorities, has taken unprecedented steps to enhance preparedness on multiple levels [5].

Little has been written about emergency preparedness. A search using PubMed, Cumulative Index for Nursing and Allied Health, and Psych INFO search engines and the term "emergency preparedness" resulted in no matches. Further searches using "disaster," "preparedness," "emergency," and similar related terms provided limited results, with most articles identified being related to natural and technological disasters.

Health care professionals and public health professionals are considered by many to be the first line of emergency defense [6–8]. The goal of this care is to deliver acceptable quality while saving as many lives as possible [9]. Little is known, however, about the level of health workforce preparedness nationwide [3,10]. The Gilmore Commission [3] found that many agencies and organizations implemented workforce preparedness activities without first conducting a needs assessment including baseline knowledge levels or learning styles of the audience or effective teaching methods. According to Vastag [11], physicians and nurses lack training; he states "physicians are not trained, paid or required to know about bioterrorism" [11]. Stanley [12] identified the 2.7 million nurses registered to practice in the United States as the single largest health professional resource for response and cites their expert assessment skills, critical thinking, decision-making and abilities to set priorities and collaborate as the greatest strengths they bring to managing emergencies.

Nurses are known to be team players and work effectively in the interdisciplinary teams needed in emergency situations [13].

Macintyre and colleagues [14] contend that many health-related emergency preparedness issues have not been addressed fully. Health care providers and facilities are vital collaborators in response to actual emergencies, yet they often are overlooked in the development of comprehensive community-wide emergency preparedness plans [14,15]. For example, Treat and colleagues [16] found that none of 30 hospitals examined were prepared to handle a biologic incident, and only 27% were prepared to handle a chemical incident. Approximately three fourths believed their sites were not prepared at all. Every hospital in their study reported a need for specific training but identified obstacles in achieving it.

Education and workforce training goals and strategies for emergency preparedness vary widely [2]. No standards are defined clearly, and guidelines for emergency preparedness do not exist [5,17]. Waeckerle [18] stated that there is no single source of authority or approved body of emergency preparedness content or curriculum, and as a result, there has been unfocused training and educational efforts. He noted that there is no program or policy office to integrate federal programs for emergency preparedness-related assistance and provide guidance to states and local communities. As Turnock [15] pointed out, the responsibility for defining what types and quantities of services are needed and what outcomes are desired and realizing them has been left to the states, raising the potential for inconsistency and lack of standardization of approaches from state to state. This may be because of the absence of an operational definition of emergency preparedness; without one, it is impossible to design the required education, training, and exercises to achieve it.

Wright [19] defines core competencies as the "knowledge, skills, abilities, and behaviors needed to carry out a job." In the absence of federal criteria, several groups independently have attempted to develop core competencies for emergency preparedness without attempting to coordinate the competencies across the many types of emergency responders. Health care roles already addressed include emergency medical technicians and physicians [20], hospital workers [21], and public health workers [21,22]. Groups addressing nursing core competencies include the American Red Cross [23], Association of Teachers of Preventive Medicine [24], and the International Nursing Coalition for Mass Casualty Education [25]. Unfortunately the vision and resulting core competency requirements are inconsistent across the groups.

Finally, emergency preparedness is big business. In total, the Department of Homeland Security (DHS), Department of Health and Human Services (DHHS), and Department of Justice provided $13.1 billion from FY'02 to FY'04 in grants to first responders and state and local governments to prevent, respond to, and recover from potential acts of terrorism and other potential disasters [26]. These funds were used to purchase equipment and provide training to help first responders save lives. However, no measures of effectiveness (MOEs), the quantifiable management tools that provide a qualitative and

quantitative means for measuring effectiveness, outcomes, and performance, exist for emergency preparedness [15,27]. According to the Gilmore Commission [3], "there are not yet widely agreed upon metrics by which to assess levels of preparedness among the medical and public health workforces. . .there is not even a single definition of a "prepared workforce," because there is no consensus on what being prepared is." Without effective MOEs, it is impossible to demonstrate that these huge expenditures have been beneficial and have resulted in any improvements in preparedness levels.

DEFINITION OF EMERGENCY PREPAREDNESS

Although there has been many uses of the term emergency preparedness, there appears to be high degree of uncertainly as to what the term means. Several key documents using the term emergency preparedness were reviewed for this article. These included: the Federal Response Plan [28], Emergency Responder Guidelines [29], National Incident Management System [30], Interim National Response Plan [31], National Response Plan [32], National Incident Management System Integration Center [33], and Personal Emergency Preparedness [34]. Only one definition of emergency preparedness, which referred to municipalities and not personnel, was found. According to Perry and Lindell [4],

> "Emergency preparedness refers to the readiness of a political jurisdiction to react constructively to threats from the environment in a way that minimizes the negative consequences of impact for the health and safety of individuals and the integrity and functioning of physical structures and systems."

The concept emergency preparedness was not found in any of several dictionaries consulted or in Roget's Thesaurus. There is no published theoretical or operational definition of the term emergency preparedness on which to base the development of specific competencies. In conducting an analysis of the terms however, Merriam-Webster [35] defines emergency as: "(1) an unforeseen combination of circumstances or the resulting state that calls for immediate action; (2) urgent need for assistance or relief." Preparedness is defined [35] as "the quality or state of being prepared; esp: a state of adequate preparation in case of war." The Federal Emergency Management Agency [36] defines preparedness as "knowing the warning signs and what to do during an emergency" and "plans or preparations taken before an emergency occurs to save lives and to help response-and-rescue operations".

Homeland Security Presidential Directive (HSPD)-8 [37] states:

> The terms "major disaster" and "emergency" have the meanings given in section 102 of the Robert T. Stafford Disaster Relief and Emergency Assistance Act. . .The term "preparedness" refers to the existence of plans, procedures, policies, training, and equipment necessary at the Federal, State, and local level to maximize the ability to prevent, respond to, and recover from major events. The term "readiness" is used interchangeably with preparedness.

The Robert T. Stafford Disaster Relief and Emergency Assistance Act states

> "Emergency" means any occasion or instance for which, in the determination of the President, Federal assistance is needed to supplement State and local efforts and capabilities to save lives and to protect property and public health and safety, or to lessen or avert the threat of a catastrophe in any part of the United States [38].

Landesman [7] defines emergency as "any natural or man-made situation that results in severe injury, harm, or loss of humans or property" and preparedness as:

> "All measures and policies taken before an event occurs that allow for prevention, mitigation, and readiness. Preparedness includes designing warning systems, planning for evacuation and relocation, storing food and water, building temporary shelter, devising management strategies, and holding disaster drills and exercises. Contingency planning is also included in preparedness as well as planning for postimpact response and recovery."

During a series of interviews, representatives from key organizational stakeholders were asked to define the term emergency preparedness. Organizations included: the American Red Cross; the Center for Health Policy, Columbia University School of Nursing; the Commissioned Corps Readiness Force, DHHS; the Emergency Management Institute, DHS; the Emergency Preparedness Evaluation and Specialty Branch of the Health Resources and Services Administration, DHHS; the International Nursing Coalition for Mass Casualty Education; and the National Disaster Medical System Training Program, DHS. All of these organizations used the term emergency preparedness without having or providing an operational definition of the term. Steven Sharro from the Emergency Management Institute emphasized:

> It's one of those a-priori base terms that is expected to be commonly understood. I may be wrong, but I'm not aware of any FEMA doctrine that formally defines the term "emergency preparedness" (Steven Sharro, Emmitsburg, MD, personal communication, 2004).

Perhaps Turnock best sums up the lack of consensus of a definition of emergency preparedness in his comments [15]:

> "Currently, states are not clear about what is meant by preparedness and how it can be measured and recognized. In this definitional vacuum, states are left to fend for themselves, resulting in uneven and inconsistent approaches from state to state and from locality to locality within states."

DEFINING ATTRIBUTES

Defining attributes are those characteristics of a concept that appear over and over again. They help to name the occurrence of a specific phenomenon as differentiated from similar or related ones [1].

Defining attributes are person-specific and role-specific. Nancy McKelvey, Chief Nurse of the American Red Cross, echoes this thought by describing both role-specific technical skills and personal attributes. She stated [8], "nurses need assessment skills to assess the individual, the group and the environment, and adaptability." She also identified that nurses need to be flexible, creative, and able to work in frequently changing environments with many different disciplines without the usual technology and support. Riba and Reches [39], as a result of focus groups with Israeli nurses, included as additional attributes of emergency preparedness: accountability; active, creative, and effective decision-making and problem-solving; assertiveness; autonomous action; dedication; the desire to do the right thing; effective communication; knowing where and how to access additional information and resources; open-mindedness; recognizing and acknowledging personal strengths and limitations; and the ability to function as a member of a team.

There are no defined national technical emergency preparedness standards for nurses. Several groups have attempted to define the technical skills required by nurses for emergency preparedness [23–25] by defining core competencies. No consensus on a required technical skills set has been reached.

ANTECEDENTS

Antecedents are the events or actions that must be in place or occur before a concept can transpire [1]. Chen and colleagues [40] examined family physicians' beliefs about preparedness and defined the antecedents of emergency preparedness as: (1) the awareness of the environment, (2) the perceived threat of an emergency, and (3) engagement in the identification of training needs. Other authors supported these views and also included planning for response and training and exercise as practice to cement new requisite skills [10,41–45]. For clinicians to take personal action to obtain and then update and reinforce training, they must see the benefit. They must believe that there is a personal risk to themselves and their community and new or additional skills needed that they must learn and practice to sustain their competence.

CONSEQUENCES

Consequences are those events or incidents that occur as a result of the occurrence of the concept. They are useful in determining neglected ideas, variables, or relationships that may yield new research directions [1]. Riba and Reches [40] cited as consequences of emergency preparedness: (1) personal satisfaction, (2) sense of control, (3) sense of achievement, (4) sense of pride, and (5) competent decision-making. Most importantly, their nurses identified specialized training as providing them the means to function in their role during the chaos of the disaster.

EMPIRICAL REFERENTS

Empirical referents are classes or categories of phenomena that measure the concept or determine its presence in the real world [1]. No metrics exist that

measure overall emergency preparedness. Reineck and colleagues [46] developed the Army Nurse Readiness Instrument, which estimates the level of individual readiness perceived by Army nurses. Only one instrument exists that examines domestic preparedness training for first responders [47]. To a lesser degree, after action reviews and lessons learned could be considered a proxy for empirical referents if their recommendations were implemented. The influence of individuals and systems on core practices, both in capacity and performance, should be measurable. The instruments to measure and evaluate them have not been established. Therefore, development of standardized metrics and measurement tools is critical to empirical assessment of emergency preparedness.

RELATED CONCEPTS

Related concepts demonstrate similar ideas to the concept being studied, but differ when examined closely [1]. There are several concepts related to emergency preparedness that are used interchangeably but appear to have varied meanings. These include all-hazards preparedness [37], bioterrorism preparedness [5], citizen preparedness [48], community emergency preparedness [4], community preparedness [49], disaster preparedness [23], disaster response [23], family preparedness [49], hospital preparedness [16], individual preparedness [49], national biodefense preparedness [5], nurse preparedness [8], public preparedness [5], public health emergency preparedness [50], public health preparedness [2,51], and terrorism preparedness [52]. Also mentioned is the concept of emergency management as "the process of preparing for, mitigating, responding to and recovering from an emergency" [53] and surge capacity as "the ability to expand care capabilities in response to sudden or more prolonged demand [54]. Although each of the related concepts shares some attributes of emergency preparedness, some are threat-specific. Others involve only specific elements, such as planning or response, and do not encompass the entire breadth of the term emergency preparedness.

MODEL CASE

The following is a model case constructed to illustrate the concept of emergency preparedness. A model case is a real-life example of the concept that includes all of the defining attributes of emergency preparedness and no other attributes [1].

At the entrance to a shopping mall, a hospital nurse senses a strong vibration and watches as shelves and fixtures start to sway and items begin to fall to the floor. Realizing that an earthquake is taking place, she quickly exits the building and returns to her car in the parking lot. In the safety of her car, the nurse turns on her radio and hears a broadcast emergency alert over the local radio station announcing a 5.8 earthquake 100 miles from her location. Initial reports indicate the quake has resulted in many casualties. The broadcaster announces that the local hospital emergency plan has been implemented and that all staff are being asked to report for duty. The nurse returns to her home and initiates

her family emergency plan. Her husband and children each perform their planned and exercised roles, turning off gas and water lines at the main valves. Then they move to the designated family area containing supplies, including a first aid kit, flashlights and spare batteries, bedding, bottled water, and nonperishable foods that require little or no cooking and no refrigeration. Using a battery-operated portable radio, her husband monitors the local emergency radio station. The children amuse themselves with games and coloring books put aside for this situation. Assured that her family is safe and taken care of, the nurse quickly consults a review sheet of her hospital's emergency plan and then drives to her place of employment. She arrives at the prescribed hospital entrance and presents her emergency response credential. She reports to the reception area and accepts her assignment in the triage area. As the first health care professional at the triage site, she quickly implements the triage portion of the hospital disaster plan. She assumes command of the triage area and evaluates and sorts casualties to the appropriate treatment site. When a senior staff member arrives, the nurse relinquishes command and assumes the role of staff person, assisting in the triage process. When the flow of casualties stops, the nurse returns to the reception area, to be told that there are no additional needs and she is released from duty. Upon arriving home, she recounts her personal satisfaction in performing well. She attributes her success to the ability to capitalize on experiences gained from previous training and exercises. She states that her experiences resulted in her ability to appropriately assume and function in her role in her family's as well as the hospital's emergency plans, allowing her to meet her organization's mission.

This scenario reflects that everyone knew what to do, that plans made earlier were put into action and worked. As a result, family members were safe, and medical and health services were available and provided. Fig. 1 illustrates the concept of emergency preparedness.

PROPOSED DEFINITION OF EMERGENCY PREPAREDNESS

Based on the preceding analysis, a clarified definition of emergency preparedness is proposed:

> Emergency preparedness is the comprehensive knowledge, skills, abilities, and actions needed to prepare for and respond to threatened, actual, or suspected chemical, biological, radiological, nuclear or explosive incidents, man-made incidents, natural disasters, or other related events.

RELEVANCE FOR NURSING

According to Walker and Avant [1], development of a concept analysis can be useful for:

- Defining ambiguous terms used in theory, practice, education, and research; providing operational definitions grounded in a theoretical basis
- Understanding the underlying attributes of a concept
- Assisting in the development of research instruments and outcome measures

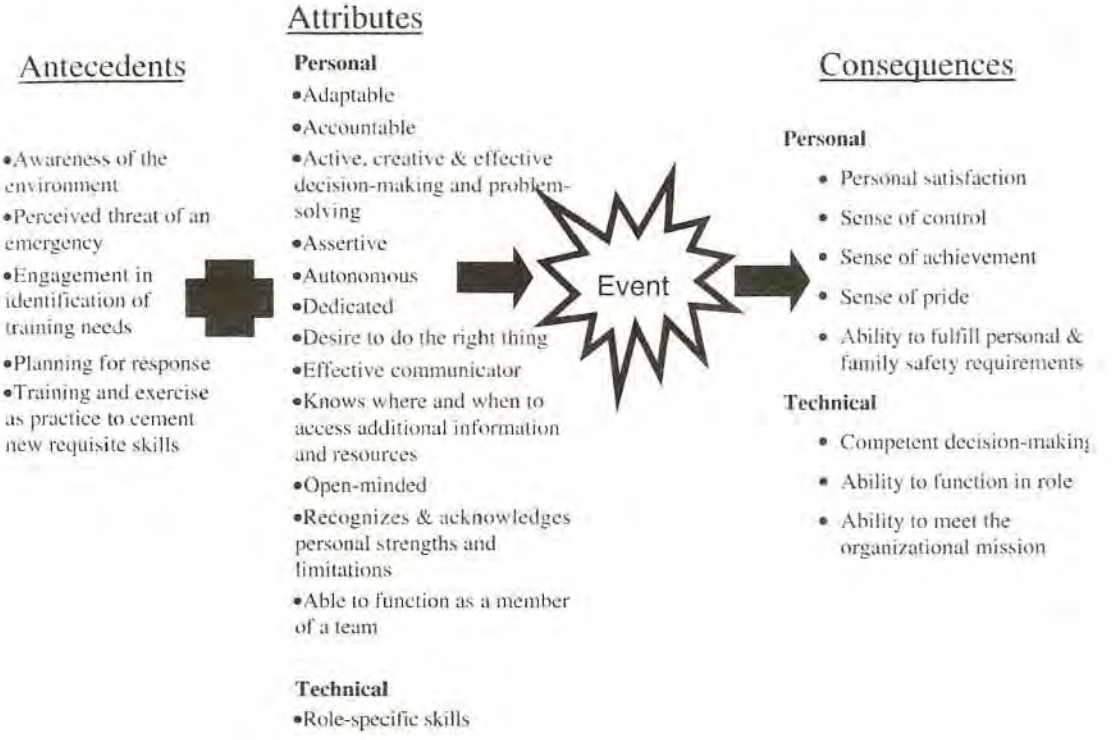

Fig. 1. Concept of emergency preparedness is illustrated.

Because nursing is the single largest health professional group, work toward further refinement of the concept of emergency preparedness has relevance for nursing practice and may assist in the development of research opportunities needed to understand this concept in its fullest dimension. Further studies are needed in a variety of settings and professional groups to assist in the development of nationally recognized and standardized core competencies.

SUMMARY

This concept analysis was undertaken to clarify the concept of emergency preparedness, enhance the application of theory to practice, and raise awareness of the responsibilities of the therapeutic role of health care providers in the emergency preparedness arena, especially nurses who engage in emergency preparedness activities. Although considerable progress has occurred since 2001, much remains to be done.

Consensus about the operational definition of emergency preparedness is fundamental to a comprehensive and effective national plan. Increased understanding of the concept will ensure that the range of preincident actions and processes are standardized and consistent with mutually agreed upon doctrine. More attention should be given to rigorous, scientific evaluation of the effectiveness of existing emergency preparedness training programs and the development of systems of metrics for measuring capacity and performance. These have significant implications for future research in this area. Although it

is impossible to prevent future incidents, it is possible to set in place an emergency preparedness system that allows for activities to prepare for and respond to future emergencies, minimizing public health consequences.

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Title: Exploring the Emergency Preparedness of Disaster Healthcare Responders Using the Meleis' Transitions Framework

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Abstract: Aim: To explore issues critical to successful transition to the role of disaster responder using Meleis' transition framework.
Background: Little data exists about the preparation required to effectively transition to the disaster role.
Methods: In 2007, RN and MD responders to Hurricanes Katrina and/or Rita completed an IRB approved, anonymous, web-based questionnaire on their response experiences.
Results: Of 196 respondents, most reported difficulty in role transition. Provision of appropriate information most strongly influenced the transition experience
Conclusions: Responders often made the transition without adequate support or direction. Transition outcomes identified by Meleis can be positively influenced through provision of information.

*** Title Page (including all authors in order of appearance, and acknowledgements)**

Title: **Exploring the Emergency Preparedness of Disaster Healthcare Responders Using the Meleis' Transitions Framework**

Short Title: Exploring Emergency Preparedness

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INTRODUCTION

In September 2005, Hurricane Katrina, a Category 5 hurricane, and Hurricane Rita, a Category 4 hurricane, slammed into the Gulf Coast states of Louisiana, Mississippi, and Alabama, displacing 770,000 persons and sending 89,000 of these evacuees (11.6%) to make-shift shelters. The medical infrastructure in the Gulf Coast sustained extraordinary damage and collapsed, creating an unprecedented demand for relief healthcare services. The National Response Framework and its Public Health and Medical Annex calls for the establishment of alternative, non-hospital, field medical facilities, staffed by volunteers, to treat thousands of victims of large-scale events. Federal planners assume that trained and competent healthcare workers will volunteer to staff these facilities despite the fact that there is no evidence that volunteers are prepared and/or competent to function in these roles. Hurricanes Katrina and Rita were the first real tests of this alternative, non-hospital concept. According to most, the system stumbled or failed[1].

Responding to disasters is different from working as a healthcare provider in standard types of “fixed” facilities in a day-to-day environment and requires different skill sets[2, 3]. To date no systematic examination of the transition of health care providers from their usual provider roles to the role of a disaster responder exists. As a result, very little is known about what knowledge, skills and abilities or professional competencies are needed or how responders should be prepared to function in a disaster—critical information required to design effective national response plans and future training content. The present study sought to investigate the issue of emergency preparedness and professional competencies of individual healthcare responders who served during Hurricanes Katrina and Rita. The aim of this paper is to explore and

analyze the critical issues in a successful transition to the role of disaster responder using Meleis' transition framework.

BACKGROUND

Meleis' Transitions Framework

Developed by Chick and Meleis[4(pp238,239)] in 1986, the transition model describes the phenomenon of transition which they define as "those periods between fairly stable states" experienced by an individual in "the passage from one life phase, condition or status to another" involving complex person-environment interactions imbedded in the context of the situation. This definition recognizes that transition can be deliberately sought out or can be the result of an event outside of one's control. The transition model focuses on four major concepts: Nature of Transitions, Transition Conditions, Patterns of Response, and Nursing Therapeutics (see Figure 1). The figure depicts how the Nature of Transitions (types, patterns and properties) as influenced by personal, community and society Transition Conditions result in Patterns of Response that can be observed through both process and outcome measures. The model contends that interventions (nursing therapeutics) can be tailored to fit the assessed transition conditions and the level of preparation and knowledge can be supplemented to successfully assist the client to a positive outcome.

The transition process begins when a triggering event creates instability and the need for change and the person experiencing first anticipates or is aware of this disruption. During passage, the person in transition must use all of their personal, environmental and interpersonal resources to help them in the change process. Exit occurs when stability has been achieved. In the model, patterns of response are those objective behaviors exhibited by the person experiencing transition and are composed

of both process indicators as well as outcome indicators. Process indicators include measures of interpersonal relationships such as the level of feeling to need and stay connected, being situated, how well the person interacts with his or her environment, the ability to develop confidence with a new skill or role and coping. In the model, outcome indicators include measures of mastery of the skill or role needed to manage the transition.

According to Kralik, Visentin and van Loon[5(p320)], transition "is the way people respond to change over time. People undergo transition when they need to adapt to new situations or circumstances in order to incorporate the change event into their lives". Transitions often include changes in identities, roles, relationships and abilities[6]. Each transition is characterized by its own uniqueness, complexities and multiple dimensions. Because the value and associated meanings attributed to transitional events are individual and vary between persons, transitions are not experienced uniformly by different people and are intrinsically unpredictable, even when circumstances are similar.

Transitions can be mediated and facilitated[6]. For example, changes in the environment not only require an adjustment to the new and unfamiliar, but also disrupt familiar reference points and the availability and access to resources. If the person perceives that there are people, communities or social resources and supports readily available, the transition proceeds smoothly. However, the absence of these can result in feelings of disconnectedness, disequilibrium, uncertainty and stress, especially if there are significant differences between what was expected based on past experience and what is occurring. Schumacher and Meleis[6] assert that meanings, expectations of events, level of knowledge and skill, availability of new knowledge about a change

event, resources available in the environment, capacity to plan for change, and emotional and physical well-being all impact transition outcomes.

Transition occurs over time and entails change and adaptation[4-6]. Transitions often require that the individuals acquire/ incorporate new knowledge to change behavior and therefore to change their personal definition of self in the new environment[7-9]. Cappleman[10(p172)] contends that "the main strength of a nursing model of transition lies in its ability to reveal the dynamic and fluid nature of accommodating to change". The transitions model has been used to examine a wide range of transition experiences including: taking on the family caretaker role[11]; retirement for nurses[12]; becoming a mother[13]; experiencing menopause[14]; Hepatitis C[15]; women living with chronic illness[16]; passage to fatherhood[17]; community neonatal nursing work[10]; children with cancer[18]; and entry into nursing homes[7].

Use of the model in this study.

According to Kaji and Lewis[19] in a disaster, medical personnel perform best at tasks familiar to them and in familiar environments. Hayes[20] argues that leaving the comfort zone where one feels competent and transitioning to a new environment and role with different expectations can lead to feelings of disorganization, uncertainty, and insecurity.

The skills required to respond to a disaster are different than those used daily in "usual" provider roles[2, 3]. Medical care transitions from dedicating resources to resuscitating the sickest patients to conserving resources and providing care to those victims with the greatest likelihood of survival; it converts from high technology to low technology in an austere environment; and, it shifts from automated equipment to manual equipment—skills that are not routinely used or practiced. Emergency

responders are required to know when to make this shift and possess the skills to improvise and recombine available resources in new ways in order to react appropriately to unanticipated demands. Past experiences cannot be used as the only source of information to anticipate possible crises[21]. Flexibility, creativity and improvisation at the disaster site are needed to succeed[21, 22].

Emergency preparedness and the requirement to respond represent situational and organizational transitions that require the healthcare worker to leave a normal practice situation of relative knowns—such as known facility, staff, policies, procedures and routines for an environment of unknowns. In an earlier study, Author[23] found skills were not necessarily the main issue in transition as only 22% of respondents reported that they did not know a specific skill during a disaster response. Instead, what responders described was an abrupt change or transition from the everyday practice worlds that required accommodation in order to practice effectively in the disaster environment. There are no national or specific emergency preparedness guidelines for the training and assessment of the preparedness of healthcare providers[23]. Standard curricula do not prepare healthcare providers for emergency preparedness and response activities[24].

Transition conditions influence the outcome by either facilitating or inhibiting a healthy response. Through better understanding of emergency response transition conditions and patterns of response, interventions can be devised and implemented and the level of preparation and knowledge supplemented to facilitate transition movement towards positive patterns of response—the mastery of the skills or roles needed to manage during an emergency response and regain stability and a sense of well-being upon completion. Use of this model offers an opportunity to begin to address what

transition conditions are likely to be encountered as well as how current training can be modified to better facilitate the transition experience.

THE STUDY

Aims

The purpose of this study was to: (1) describe the characteristics of Hurricane Katrina and Rita healthcare responders; (2) explore and describe the important transitions they experienced; and (3) describe transition factors that were related to a positive and satisfying response experience.

Design / Methodology

An internet-based survey was developed to investigate transition issues and professional competencies in disaster responders. In fall 2007, an invitation to participate was sent out through professional and responder organizations to MDs and RNs who responded to Hurricane Katrina or Rita. Participants were asked to complete the anonymous 544-item web-based questionnaire designed to elicit information on their perceptions of the knowledge, skills, and abilities required during their response. Included in the study were demographics, transition perceptions pre-, during and post event, two specific professional competency areas —basic clinical care and triage as well as personal perceptions related to the response. Respondents were asked to indicate whether a transition event occurred (yes/no), and then rate the importance of the event using a 5-point Likert-type scale ranging from not important (1) to very important (5). The outcome of the transition overall was measured by two summary variables where the respondent was asked to rate on the five point Likert-type scale whether the experience had been a positive experience and whether the response had been a satisfying experience. The survey used multiple formats for responses including

pull down menus, check boxes, Likert scales and fill-in-the-blank. Beta testing of the survey indicated that all questions could be completed on-line in less than 40 minutes (Figure 2).

Sample / Participants

Because there was no central repository of responder names and contact information available, recruitment announcements describing the study and survey availability were distributed by major professional groups and responder organizations including the: American Association of Colleges of Nursing; American Red Cross; Emergency Nurses Association; National Disaster Medical System; National Emergency Preparedness Education Coalition; National Nurse Emergency Preparedness Initiative; National Organization of Nurse Practitioner Faculties; US Public Health Service; the Veterans Administration and others. In addition, pilot study respondents who indicated a willingness to participate in future surveys received a personal invitation to participate via an email address they supplied. Inclusion criteria for this convenience sample required that the person be a physician or Registered Nurse age,18 years or older, who worked on-site in a disaster response for either Hurricane Katrina or Rita in Alabama, Louisiana or Mississippi for a minimum of 14 consecutive days.

Data Collection

The survey was administered on-line using the University server. Respondents used a series of radio buttons and drop down menus to allow the subject to respond quickly with a minimum of key strokes. Responses were “treed” so that nurses viewed only nursing-specific responses for example on nursing education, specialties and practice sites and physicians saw comparable lists for themselves. Responses were

designed to compare and contrast information obtained. To address respondents with slow internet conditions, a printable version of the survey was posted with the offer to reimburse postage for those wishing to do the survey as pencil and paper.

The survey was accessible during the period of August 5th to November 7th, 2007. Of the 256 persons attempting the survey, a total of 196 respondents met all study inclusion criteria and their responses were retained for data analysis including three persons who returned the survey using a paper and pencil response.

Validity and Reliability

In the absence of an existing tool, an anonymous survey was constructed to systematically examine the response experiences of healthcare providers. Draft items were assembled using seminal resource documents on transition, emergency response and the incident command system. Items were sequenced according to whether the experience should occur before arrival at, while at, before leaving, or after leaving an incident site. To establish the content validity of the original transition questions, an expert panel of ten reviewed each item and ranked each as essential to the transition construct.

The draft tool was pilot tested by a group of physician and nurse disaster volunteers. In addition, persons who had never responded to a disaster were included in the pilot group to ensure that terms were clear and understandable. Modifications were incorporated into the tool based on first test input and then pilot respondents completed a second round of responses. Correlations between the test-retest scores ranged from .892 -958 indicating good reliability of the scale.

A total of 55 survey items specifically addressed a transition concept. To examine the internal consistency of the transition section of the survey, each sub-

section (before leaving for the disaster site, at the disaster site, before leaving and after returning home) was examined independently as well as a whole determine the Cronbach's alpha coefficient. Sub-section coefficient alphas ranged from .718 to .935 with an overall transition scale score of .956 (mean 23.44; standard deviation (±) 14.388) indicating adequate to excellent reliability (Table 1).

Ethical Considerations

The study was reviewed and approved by the Institutional Review Board of the first author's university. Each participant received a recruitment email outlining: the purpose of the study; that completion of the questionnaire was strictly voluntary; that all questionnaire information would be kept confidential; that subjects could decline to answer a question; that subjects could stop at any time; and that no responses would be associated with the participant or his/her response organization. Participants read and agreed to an informed consent before completing the survey. All information provided was anonymous and cannot be tied back to the respondent. In order to maintain subject anonymity from the investigators for those doing the survey as pencil and paper, an IRB approved honest broker third party received the mailed-in surveys, sent back the postage reimbursement, and stripped off identifying information before forwarding the survey to the principal investigator. All results are reported in the aggregate without disclosure of individual membership or experiences.

Data Analysis

Descriptive statistics were calculated for categorical variables to describe the characteristics of respondents. Means and standard deviations were calculated from responses on the 5-point rating scales. Spearman's Rank Order Correlation was used

to calculate correlations between demographic and transition factors and the transition outcomes of a positive response experience and satisfying response experience. The data were statistically analyzed at an alpha of .05 with 95% confidence interval. All statistical tests were conducted using Statistical Package for the Social Sciences (SPSS) software (version 14.0, SPSS, Inc., Chicago, IL).

Results/ Findings

Of the 196 respondents, 59% were women. Ages ranged from 27 to 77 with the largest group being between the ages of 50-59 (38%). Most of the respondents were white and not Hispanic or Latino (98%). Of the reported professional categories n=60 (31%) were MDs and n=136 (69%) were RNs with 36% having 20-29 years of experience and most reporting working full time (87%) and mainly in rural areas (53%). Over 75% of the respondents reported providing direct patient care on a regular basis. A little over one-third (36%) reported responding to this event as their first emergency response (Table 2). Only one respondent actually came from the immediate hurricane area.

Compared to nurses, the majority of physicians had slightly fewer years of practice (>20 years- 47% vs. 63%). Most worked full time (87%) mainly in rural areas (48%) and in government agencies (38%) or hospital systems (28%). Sixty seven percent were Doctors of Medicine, 18% were an MD/ PhD and 13% Doctor of Osteopathy with one-third reporting a board certification. They described their usual populations for care as: surgical (98%); intensive/critical care (95%); obstetrics and gynecology (88%); geriatrics (80%); internal medicine (75%); pediatrics (68%); family practice (62%); and, emergency room (58%). Nine physicians reported they do not routinely take care of patients. Physicians were most commonly a member of the United

States Public Health Service (USPHS) (35%) and sixty-three percent had previously responded to a disaster. They worked on-site most often in temporary health clinics (40%), as a member of a medical strike team (12%) or at a command post (12%). Seventy-five percent reported formal training in disasters and emergency response with 13% completing US Public Health Office of Force Readiness training, 10% completing Disaster Medical Assistance Team training, and 7% each completing the American Medical Associations' Advance Disaster Life Support and the Department of Defense's Combat Casualty Care Course. Most (62%) reported that their previous disaster training was helpful during this hurricane response.

Nurses had significant clinical practice experience with 88% having over 10 years. Twenty percent possessed an Associate's degree, 35% a Baccalaureate and 41% a Master's in Nursing or another specialty with two thirds (66.2%) reporting an advanced certification. Usual practice populations included: obstetrics and gynecology (95%); family practice (91%); surgical care (90%); internal medicine (90%); geriatrics (87%); pediatrics (82%); intensive/critical care (77%); and, emergency room (65%). Thirty respondents (22%) reported that they do not routinely take care of patients. Nurses were most commonly a member of the National Disaster Medical System (23%). They worked on-site most often in a temporary health clinic (29%), in a special needs shelter (14%) or as a member of a medical strike team (11%). Sixty-four percent reported having previously responded to an emergency. Seventy-one percent reported formal training in disasters and emergency response with 11% completing Disaster Medical Assistance Team training, US Public Health Office of Force Readiness training (7%) and US Army training (4%). Sixty-four percent reported that their previous disaster training was helpful during this hurricane response.

Physicians reported more commonly than nurses that they received a situation briefing upon arrival at the site (60% vs. 55%; p=.482), were provided with the description of a specific role to accomplish (43% vs. 36%; p=.347), had an orientation to the communication equipment (43% vs. 38%; p=.522) and medical equipment (40% vs. 34%; p=.440) as well as functioned as a supervisor (55% vs. 40%; p=.067). Physicians were less often to be provided with an orientation to the documentation system (30% vs. 38%; p=.302) or equipment and supply levels (30% vs. 31%; p=0.970).

Respondents were given a series of transition questions and asked if they had personally experienced the event (yes/ no) and then asked to rank how important the event was to them. Table 3 identifies the five questions ranked most important and least important and whether or not the provider experienced this event. Respondent reported knowing how to get to the disaster site was most important (4.3, $\pm$ 0.996), briefing their replacements before leaving was second (4.28, $\pm$ 1.082) and family or friends having contact information for them was third (4.23, $\pm$ 4.23). The five least important transition events were being provided with a list of acronyms (2.68, $\pm$ 1.385), having a written code of conduct (3.17, SD 1.380), keeping a daily personnel log (3.3, $\pm$ 1.492), knowing eating (3.22, $\pm$ 1.274) and sleeping (3.22, $\pm$ 1.27) arrangements (Table 3).

Despite the fact that 78% reported that they deployed as part of an organized group with 73% reporting formal training in disasters or emergency response, overall respondents indicated that the response transition was difficult. For example, prior to leaving only 43% knew what role they would perform; what professional items to take (38%); how to protect themselves (27%); or what their decision-making authorities were (37%). While at the incident, only 40% had someone available to answer questions or demonstrate something they did not know or felt uncomfortable doing despite most

(81%) of the respondents identifying having someone available as important/very important.

Contrary to the assumptions of disaster planners and educators, neither membership in a disaster organization, prior training nor disaster response experience was significantly related to having a positive or satisfying experience. Using Spearman's rho, the demographic variables of age in years and number of years in practice had a statistically significant relationship with both transition outcomes—a positive response experience and a satisfying response experience ($p<.0.05$). When examining transition variables, a number of variables also significantly impacted both transition outcomes positively. For example, before leaving for the event, having a specific person to report in to and knowing what role the individual would perform was important. During the event, having a specific role to accomplish and knowing the levels of equipment that were on hand and when the next delivery was likely was significant. Knowing what to do in an emergency and being told how equipment and supplies were ordered impacted both outcomes, but were more highly correlated with a satisfying experience (0.215 and 0.252, $p<0.01$ respectively). Conversely, providing follow-up contact information and having a point of contact for questions or concerns were more highly correlated with a positive experience. The strongest correlations were always having someone available to answer a question or demonstrate something that was uncomfortable at the disaster site (positive response 0.242; satisfying experience 0.310; $p<0.01$) and having a chance to talk about what happened with others before leaving (positive response 0.230; satisfying experience 0.251; $p<0.01$) (Table 4).

Finally, over 73% reported their ability to recall the hurricane events as "vivid"—I can remember most events exactly or "very vivid"—like it happened yesterday. Less than 3% reported their recall as "not so clear".

DISCUSSION

The characteristics of the responders to this survey are consistent with anecdotal reports. The majority of the sample group (86%) was composed of experienced healthcare providers who reported 10 or more years of experience in their healthcare provider role. More importantly, over three-quarters (78%) of respondents reported that they had prior experience with responses. Over 58% reportedly came from teams who required training prior to response.

Hurricanes are situational transitions that generally occur as a singular event. However Hurricanes Katrina and Rita hit the Gulf Coast as multiple, sequential and related events that resulted in extraordinary damage and collapse of the medical infrastructure, creating an unprecedented demand for relief healthcare services. The aftermath of Hurricanes Katrina and Rita offered a window of opportunity to investigate and address changes needed in how we train health care professionals to respond. Transition conditions (personal, community and societal) influence the outcome by either facilitating or inhibiting a healthy response.

Patterns of Response address feeling connected, interacting, being situated and developing confidence and coping. Personnel were often used in roles that they were not prepared for. One respondent stated**:** “I was placed in a liaison role that was ill defined and that I was not prepared for. I did the best that I could, but I wasn’t very effective, or as effective as I could have been if I knew what I supposed to be doing. I would have been far more effective if I was used as a physician--a role that I had already accomplished several times. Given a choice, I would never deploy in a liaison role again, but I would gladly go as a provider.” Said another: “People were deployed to work in areas that were not their areas of expertise. I was asked to assist with re-

establishment of clinical services but I work in Public Health and can do things like outbreak investigations or surveys, surveillance and epidemiologic studies but not set up clinical services". Unlike fixed facilities and routine job assignments, novice responders are unlikely to receive a full orientation. The axiom is "see one, do one, teach one". Veteran responders know that the disaster response difference is to anticipate and teach to the unknowns of how things are "done in the field. "I got a twenty minute orientation, and then, with no experience or training was left in charge of a whole clinic! I didn't know the people, the equipment, the system or "what worked". I just gave it my best and told my staff that I was willing to listen to their suggestions. I found myself trying to do things that usually my nurses or techs do for me--it was HARD! I really didn't know what I was doing! I worried that I was doing the right thing, making the right decisions and not making things worse. I learned A LOT. I made sure that the person relieving me didn't have to learn things the hard way. I actually stayed for 2 days to make sure he was OK. I want to learn more about disaster response so that I can be part of the solution."

Many were unprepared for the well-known "hurry up and wait" phenomenon where responders are pre-positioned for action or alerted of an imminent need. "For two weeks I mostly sat around doing nothing, except waiting. When I was out it, was two days to hand out water at a federal medical station and then one day out with the Centers for Disease Control and Prevention doing a survey".

Many reported the absence of leadership: "There was little to no leadership in the actual work environment. Equipment and supplies varied greatly on a day-to-day basis. There were too many "professionals" who did NOT have any comprehension of how or what to perform in this disaster aftermath. Expectations of daily clinical routine seemed to dominate."

Though many tried to prepare themselves mentally for the realities of the situation, most found themselves unprepared. "Nothing I've been through could have prepared me for the damage caused by Hurricanes Katrina and Rita".

Without needed transition skills, individuals experience levels of disorganization, uncertainty, and insecurity during responses, which could affect the quality of care provided. There were several examples this in this study where items, though ranked as not important, were significantly related to the positive and satisfying nature of the experience; i.e. the ranking of importance of a transition variable conflicted with the item's correlation to a transition outcome. For example, while knowing both about eating and sleeping arrangements were ranked 52nd and 53rd of 55 items in order of importance, both were significantly correlated with having a positive response experience (0.205 and 0.168 respectively). Being instructed in the use of PPE ranked 49th, yet correlated significantly with having a satisfying response experience (0.191). Finally, while keeping a daily log of personnel ranked 51st, this item correlated with a positive experience (0.199) and strongly correlated with a satisfying experience (0.221, $p<0.01$).

Disasters have been and will continue to be relatively common events. While it is impossible to predict a disaster, hurricanes happen frequently in the United States and as a result, it is very possible to achieve better preparedness at least in this type of a natural disaster response as a precursor to improving response in other types of events.

Through better understanding of emergency response transition conditions, interventions can be devised and implemented and the level of preparation and knowledge supplemented. This will facilitate transition movement towards positive patterns of response—the mastery of the skills or roles needed to manage during an emergency response and regain stability and a sense of well-being upon completion. If

staffs are comfortable, they are more likely to be competent within a reasonable time frame. The Meleis transition model offers an opportunity to begin to address what transition conditions are likely to be encountered and how current training can be modified to better facilitate the transition experience.

LIMITATIONS

This study has several important limitations. Given that responders came from all over the United States and from other countries as well and because there was no central repository of responder names and contact information, there was no true list of responders. Making attempts to access the responder MDs and RNs presented a unique challenge that may have introduced unknown bias to the sample. Further, because of the anonymity of the survey, it is possible that respondents may have completed the survey more than once; however, this is unlikely since there were no duplicate responses noted. Responders from different organizations may come with different backgrounds, experience and expectations making comparison difficult. Differences between provider groups may reflect the small number within the sample. Use of a convenience sample of one event of responders limits the applicability of this study to the larger population of all emergency preparedness responders as well as other types of emergency response events. Nevertheless, to the author's knowledge, the results of this study represents the best information available about Hurricane Katrina and Rita responders and provides useful and consistent information obtained from 196 experts from every part of the nation. Further, the inclusion of two types of providers plus multiple response groups and locations of response sites increased the amount of information obtained and may demonstrate consistent themes to begin to provide a general base for understanding the phenomenon of emergency response.

Response anonymity provided the best opportunity to assess reports of training, experience of perceptions of competency. However it does not allow for verification of training or training hours. Because these data are the result of a small study, a larger study with a more inclusive questionnaire might reveal richer data.

Finally, this study took place approximately 24 months after the event and recollections may not be accurate. However, over 73% of respondents rated their recollection as vivid or very vivid.

Disaster research is difficult to accomplish. Research protocols, instruments and other materials need to be event-specific and require time to prepare. Funding organizations and Institutional Review Boards are often reluctant to rapidly review and approve protocols in the midst of an incident, and access to responders, victims or survivors may be difficult, resulting in sampling biases[25]. In addition, many regard all disaster victims as vulnerable populations[26].Several authors[27, 28] suggest that research focused on disaster situations often must be performed retrospectively to improve care and prevent repeated mistakes.

CONCLUSIONS

In this study, preliminary data was collected to explore and describe data on transitions from health care providers who were involved in the Katrina or Rita disaster responses. This study found that neither membership in a disaster organization, training nor disaster response experience contribute to a positive or satisfying response experience; however, both transition outcomes, a positive and a satisfying response experience were positively influenced by the provision of information before the event, at the disaster site and before leaving the disaster. As we plan for the next emergency situation, disaster planning and management strategies must consider how to train and

equip volunteer healthcare providers to transition to function in austere environments absent the essential services found in their usual work situations.

The Meleis Transition model provides a structure to help in understanding the process of preparing emergency responders so they are competent and comfortable within the unique structure of an evolving disaster. More extensive research is needed on the experience of emergency responders to find out with greater certainty than we know today what challenged their emergency preparedness functionality and what can be done to improve their transition skills.

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Table 1: Reliability of the transition questions expressed as Cronbach's alpha for each of the sub-sections and for the overall transition scale

Table 2: Characteristic of responders by professional group and overall expressed as number and percentage

Table 3: Five transition items rated **most** and l**east** important by respondents

Table 4: Statistically significant correlations between demographics, transition variables and a positive or satisfying response experience

Figure 1*:* Meleis' Emerging Theory of Transitions

Figure 2: Screen shot of one page of the survey

Figure 1 Meleis Model

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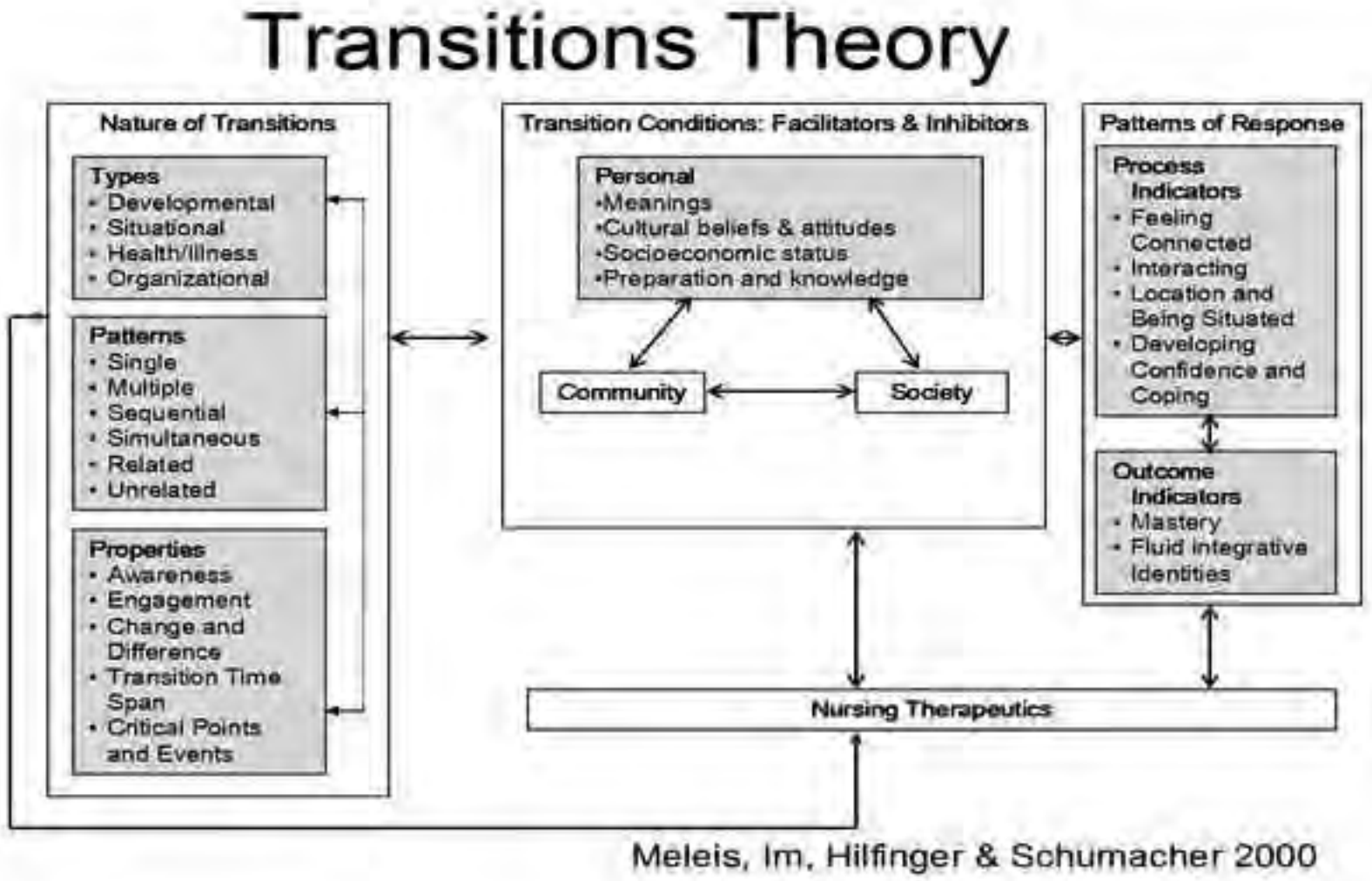

Figure 2 Screenshot of survey

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Table 1: Reliability of the transition questions expressed as Cronbach's alpha for each of the sub-sections and for the overall transition scale

Transition Period	N of Items	Cronbach Alpha
Before Leaving for the Disaster Site	14	.901
At the Disaster Site	29	.931
Before Leaving the Disaster Site	9	.935
After Returning Home	3	.718
Total Transition Questions	**55**	**.956**

Table 2: Characteristic of responders by professional group and overall expressed as number and percentage

Variables	MDs		RNs		Total	
	60	(31%)	136	(69%)	196	(100%)
Gender						
Male	46	(77%)	34	(25%)	80	(41%)
Female	14	(23%)	102	(75%)	116	(59%)
Age in Years						
<30	0	(0%)	4	(3%)	4	(2%)
30-39	9	(16%)	16	(12%)	25	(13%)
40-49	21	(37%)	47	(36%)	68	(36%)
50-59	21	(37%)	51	(39%)	72	(38%)
≥60	6	(11%)	13	(10%)	19	(10%)
Years of Practice						
< 10 years	12	(20%)	15	(11%)	27	(14%)
10-19 years	20	(33%)	35	(26%)	55	(28%)
20-29 years	19	(32%)	51	(37%)	70	(36%)
30-39 years	7	(12%)	29	(21%)	36	(18%)
40-49 years	2	(3%)	5	(4%)	7	(4%)
50 years or more	0	0	1	(<1%)	1	(<1%)
Usual Work Status						
Full Time	52	(87%)	118	(87%)	170	(87%)
Part Time	8	(13%)	17	(13%)	25	(13%)
Usual Work Area						
Rural	28	(47%)	73	(55%)	101	(53%)
Suburban	17	(29%)	39	(30%)	56	(29%)
Urban	14	(24%)	20	(15%)	34	(18%)
Deployed as a Member of an Organized Group						
Yes	47	(78%)	105	(77%)	152	(78%)
No	13	(22%)	31	(23%)	44	(22%)
Number of Previous Responses						
None	22	(37%)	49	(36%)	71	(36%)
1-4 responses	26	(43%)	61	(45%)	87	(44%)
5-9 responses	7	(12%)	14	(10%)	21	(11%)
10 or more responses	5	(8%)	12	(9%)	17	(9%)
Formal Training in Disasters/ Emergency Response						
Training Done (Yes)	45	(75%)	97	(71%)	142	((73%)
Training Helpful (Yes)	37	(62%)	86	(64%)	123	(63%)
Primary Deployment Role						
Administrative	14	(23%)	34	(25%)	48	(25%)
Patient Care	46	(77%)	102	(75%)	148	(75%)

Table 3 Five transition items rated most and least important

Table 3: Five transition items rated **most** and l**east** important by respondents

Ranked Transition Question by Transition Period			Level of Importance Respondents Attached to Each Item 1= Not Important 4= Important 5= Very Important	
	No	Yes	Mean	S.D.
MOST Important Items				
Before Event				
I knew how I was supposed to get there	51 (25.9%)	130 (66%)	4.30	.996
My family or friends had an emergency contact number for me	101 (51.3%)	80 (40.6%)	4.23	1.049
At the Disaster Site				
I received a situation briefing (told what was happening) upon my arrival	79 (40.1%)	102 (51.8%)	4.23	.873
I received a daily update of new information	82 (41.6%)	99 (50.3%)	4.20	.808
Before Leaving the Disaster Site				
I briefed my replacement	71 (36%)	110 (55.8%)	4.28	1.082
LEAST Important Items				
Before Event				
I knew what the eating arrangements were (catered meals, Meals Ready-to-Eat, that I should bring my own food, etc.)	130 (66.0%)	51 (25.9%)	3.22	1.274
I knew what the sleeping arrangements were (a hotel, a building, a tent, availability of a shower, etc.)	103 (52.3%)	78 (39.6%)	3.22	1.274
At the Disaster Site				
I kept a daily log of personnel	121 (61.4%)	60 (30.5%)	3.30	1.492
I was provided with a code of conduct (professional conduct, no drugs or alcohol, where to report concerns, etc.)	123 (62.4%)	58 (29.4%)	3.17	1.380
I was provided a list of acronyms	169 (85.8%)	12 (6.1%)	2.68	1.385

Table 4 Statistically significant correlations

Table 4: Statistically significant correlations between demographics, transition variables and a positive or satisfying response experience

(n=156)	"My Response Was a…" Positive Experience	"My Response Was a…" Satisfying Experience
Demographics		
Provider role (MD/ RN)		.163
Gender		.194
Number of years practiced	.158	.164
Age in Years	.200	.180
Before Event		
I knew approximately how long I would be gone		.161
I was told what copies of credentials to take (ex. license, BLS)		.246*
I had a point of contact for the period that I was traveling to my disaster destination		.172
I had a specific person to report in to	.165	.191
I knew what my role would be	.202	.198
I knew what the sleeping arrangements were	.205	
I knew what the eating arrangements were	.168	
At the Disaster Site		
I was told what the chain of command was		.174
I received a situation briefing upon arrival		.205
Someone provided me with an orientation to the physical layout of the organization		.205
I was told how to protect myself		.188
I was told what my work shift would be		.170
I knew who my supervisor was at all times		.208*
I was told what the levels of my decision-making authorities were		.179
I knew where the next higher referral location was		.173
I was told about safety procedures		.185
I was provided with Personal Protective Equipment (PPE)		.190
I was instructed on how to use PPE		.191
I briefed my replacement		.163
I was provided with a specific role to accomplish	.157	.170
I was told what to do in an emergency	.167	.215*
I was told about equipment/supply levels (how much was on hand/ next delivery)	.168	.199
I was told how equipment/ supplies were ordered	.180	.252*
There was always someone available to answer a question or show me something that I felt uncomfortable about	.242*	.310*
I kept a daily log of personnel	.199	.221**
I kept a daily log of events	.167	.220*
I was a supervisor	.191	
Before Leaving the Disaster Site		
I provided follow-up contact information for myself	.215*	.178
I was provided with a point of contact for questions or concerns	.229*	.197
I had a chance to talk about what had happened with others (i.e. debriefing)	.230*	.251*

All listed correlations significant at the .05 level; (*) signifies correlation is significant at the 0.01 level, (2-tailed)

Summary Statement

What is already known:

- Transition conditions influence the outcomes of the transition by either facilitating or inhibiting a healthy response to the transition.
- Federal planners assume that healthcare workers will volunteer to help during a disaster and will make the transition to this role smoothly: this is despite a lack of supporting evidence.
- Current disaster responder training programs generally focus on providing skills and are limited in their provision of transition information to assist responders to be effective.

What this study adds:

- Physician and nurses differ in their perceptions of a response experience.
- Neither membership in a disaster organization, prior training, nor disaster response experience contributed significantly to positive transition outcomes. A positive and/or satisfying response experience was most strongly influenced by the provision of information.
- This study begins to provide a general base for understanding the phenomenon of emergency response through the lens of the Meleis' Transition model and how transitions can impact the effectiveness of responders.

Peggy L. Chinn, RN, PhD, FAAN
Editor
Advances in Nursing Science

Dear Dr. Chinn:

Attached please find a manuscript submission "**Exploring the Emergency Preparedness of Disaster Healthcare Responders Using the Meleis' Transitions Framework**".

You should have the following files:

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Please feel free to contact me for any questions or concerns.

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Advances in Nursing Science

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Manuscript Title (the "Work"): "Exploring the Emergency Preparedness of Disaster Healthcare Responders Using the Meleis Transition Framework"

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Subject: Request to use a figure of your model
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Meleis. A.I., Sawyer, L.M., Im, E.O., Hilfinger-Messias, D.K. & Schumacher, K.L. (2000). Experiencing transitions: An emerging middle-range theory. *Advances in Nursing Science, 23*(1), 12-28.

I am currenlly completing my PhD at the Uniformed Services University. I conducted a study on emergency preparedness and competency in health care providers using your model as the theoretical framework. I would like to submit an article to Advances in Nursing Science reporting my results and include your model in the literature review.

A copy of the abstract is included for review.

Thank you....Lynn

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- I certify that I have disclosed on the title page and in the transmittal letter any possible financial conflicts of interest I have with the subject matter of this manuscript.
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Exploring the Emergency Preparedness Competencies of Disaster Healthcare Responders During Hurricanes Katrina and Rita

Introduction: Despite consensus that preparation is key to effective response, there is little information in the literature about what competencies are required or how to best prepare disaster healthcare providers. Hurricanes Katrina and Rita triggered the largest natural disaster relief operation in United States history and created unprecedented demand for disaster healthcare services. This study identifies and analyzes critical issues related to emergency preparedness for individual providers by exploring and describing the characteristics of healthcare responders and assessing specific competencies that were employed during those disasters. Both the professional categories as well as the specific competencies were selected as a result of a previous pilot study.

Problem: This study was designed to: (1) describe characteristics of Hurricane Katrina and Rita healthcare responders; (2) assess specific competencies in **basic clinical care** and **triage** that were used; and (3) compare how physicians (MDs) and registered nurses (RNs) differed in provision of these skills.

Methods: In 2007, RNs and MDs who responded to Hurricanes Katrina and/or Rita were invited to complete an IRB approved, anonymous, 544-item web-based questionnaire on their experiences. Responder characteristics and competencies used were examined using descriptive and inferential statistical analysis.

Results: Respondents (n=196) were predominantly nurses (69%); female (59%); >40 years of age (81%) with >20 years of practice (58%), previous response experience (73%) and formal training in disaster preparedness (73%). Most reported that they performed basic clinical skills (n=132, 67%) with 44% reporting performing triage (n=86). There was no statistical difference ($p>.05$) between MD's and RN's on whether they performed basic care (67% vs. 68%,) or triage (37% vs. 47%) nor on previous training in basic care (100% vs. 100%) or triage (96% vs. 98%) nor in their confidence performing basic care (4.6 vs. 4.6) or triage (4.6 vs. 4.4). What responders had difficulty with was the abrupt change from everyday practice required in order to perform effectively at a disaster site.

Conclusions: Responders were well trained and confident in performing basic clinical care and triage competencies. Issues instead seemed to arise from functioning within the unique challenges of a disaster environment. Current disaster training focuses on teaching skills, rather than how to function in a disaster setting. Further study is needed on how to more effectively prepare individuals for a disaster response.

Key Words: Competency; Emergency preparedness; Hurricane; Disaster; Transition

INTRODUCTION

Before the attacks on the World Trade Center, few healthcare providers received any formal education in disaster response or emergency preparedness. Those who had any knowledge were more likely to have previously served in the military, worked in the pre-hospital environment, participated in humanitarian relief work or perhaps worked in an emergency department. The terrorist attacks in September 2001 combined with the subsequent anthrax attacks exposed weaknesses in the public health infrastructure and drew U.S. policymakers' attention to the need for strengthened public health emergency preparedness at the local level[1]. In September 2005, Hurricane Katrina, a Category 5 hurricane, and Hurricane Rita, a Category 4 hurricane, struck the states of Louisiana, Mississippi, and Alabama, and triggered the largest natural disaster relief and recovery operations in United States history. In many instances, local medical infrastructure collapsed, medical care surge capabilities were slow or misdirected, and frail, chronically ill were left with inadequate care.

According to National response plans and annexes, surge healthcare capacity will be created by establishing alternative, non-hospital, field medical facilities. This surge capacity is envisioned to be capable of treatment of thousands of victims in large-scale events. Federal planners assume that these facilities will be staffed by trained and competent volunteer healthcare workers. No studies have addressed whether volunteers are prepared and competent to function in these roles. Hurricanes Katrina and Rita were the first real tests of this alternative, non-hospital concept, and according to most, the system stumbled or failed[2]

Up to this time, no systematic examination of the preparedness of health care providers and their response capabilities during a large scale response has occurred. As a result very little is known about what knowledge, skills and abilities or professional competencies are needed in a disaster. This information is critical in designing effective national response plans and future training content. Thus, to evaluate these possibilities, this study was designed to examine the

specific professional competencies that were important to the response of health care providers during these disaster situations.

Emergency Preparedness

A key concept in disaster management and planning is "emergency preparedness." Although emergency preparedness is a concept frequently referred within medical literature, psychological literature, local and state and federal documents, it is not well defined. Emergency preparedness training similarly is not well delineated.

The term “emergency preparedness” has been used as the basis for individual, local, state and national preparedness plans. These plans are aimed at enhancing readiness, increasing the ability to respond to larger numbers of casualties, and improving response to terrorism and other public health emergencies. Emergency preparedness is achieved through a process that involves planning, the procurement of equipment, training and exercising[3]. In collaboration with state and local authorities, the federal government, has taken unprecedented steps to enhance preparedness on multiple levels[4]. However, Turnock[5] best summed up the lack of consensus of a definition of emergency preparedness in his comments:

> Currently, states are not clear about what is meant by preparedness and how it can be measured and recognized. In this definitional vacuum, states are left to fend for themselves, resulting in uneven and inconsistent approaches from state to state and from locality to locality within states (p. 31).

Slepski[6] recently published the first concept analysis of the term emergency preparedness, intended as a base for the development of specific competencies. She defines emergency preparedness as “the comprehensive knowledge, skills, abilities and actions needed to prepare for, and respond to, threatened, actual or suspected chemical, biological, radiological, nuclear or explosive incidents, man-made incidents, natural disasters or other related events” (p. 426).

Emergency Preparedness Training

Emergency preparedness education strategies and workforce training goals vary widely[1]. There are no clearly defined standards and emergency preparedness training guidelines do not exist[4, 7-10]. According to Waeckerle[11], there is no single source of authority or approved body of emergency preparedness content or curriculum. Nor is there a single program or policy office to integrate federal programs for emergency preparedness-related assistance and provide guidance to states and local communities. This absence of a central coordinating body has resulted in unfocused training and educational efforts. In addition, states have been left with the responsibility for defining what types and quantities of services are needed as well as what outcomes are desired, further increasing the potential for inconsistency and lack of standardization[5]. In 2002, the Agency for Healthcare Research and Quality (AHRQ)[12] commissioned an evidence report for the purpose of identifying the most effective methods of training clinicians for detection and management of a bioterrorism attack or other public health events. This report encompassed a review of 1,942 pieces of literature. The resulting report found that:

- there are no published validated measures of preparedness
- little data demonstrated the effectiveness of particular training interventions
- no studies evaluated educational programs for bioterrorism or other public health events in particular
- no studies addressed how to update and reinforce the training of clinicians in how to respond to mass casualty incidents

The AHRQ addressed the gap in training in its *Altered Standards of Care in Mass Casualty Events* (MCEs)[13], which proposes that efforts be directed to continue and expand opportunities to train providers and others to respond effectively to MCEs (p. 4). It recommends that entry level training of each provider group include components of preparedness training as well as ongoing competency-based training. The *Standards* further suggest that role- and condition-specific competency training be based on the “doctrine of routine” (p. 28) which

assumes that healthcare providers will do best in the practice areas that they do most, but also recognizes that extensions and expansions of provider roles is likely in an MCE. The recommendations include just-in-time training, but only when appropriate, especially for those skill sets that differ from usual practice.

Competency

Wright[14] in her seminal work on competency assessment defines core competencies as the "knowledge, skills, abilities, and behaviors needed to carry out a job" (p. 7). Competencies fulfill the organizational, departmental, and work setting requirements under the varied circumstances of the real world. Core competencies are based on key essential job functions; frequently used job functions and accountabilities; and, high-risk job functions and accountabilities that involve actions that could cause harm, death or legal actions to customers, employees or the organization. Competencies are articulated in competency statements that are measurable. To make ongoing competencies meaningful and achievable, Wright asserts that no more than ten competencies should be addressed at any given time.

Several authors suggested the development of formal emergency preparedness educational core competencies[15-18] with competency-based objective evaluation [19]. A second group suggested that emergency preparedness training be required continuing education[20-22] or a requisite for medical privileges or licensure[23]. The Joint Commission on the Accreditation of Healthcare Organizations (JCAHO) requires measurement of competency in its accreditation process. In January 2001, JCAHO introduced new emergency management standards, building on its long-standing disaster preparedness requirements. One specific phase of the new standard includes determination of the priorities for, and means for effectively deploying, the finite resources needed to support response systems, including trained personnel.

Several groups have independently attempted to develop core competencies for a variety of responders in the absence of Federal criteria, without any attempts to harmonize them

across the many types of emergency responders. Those addressing healthcare include: emergency medical technicians, emergency physicians and nurses[24], emergency response clinicians[25], hospital workers[26], medical professionals[27], and public health workers[26, 28]. Those specifically addressing nursing include the Columbia School of Nursing (public health and hospital nurses) [26], the Association of Teachers of Preventive Medicine (advanced practice nurses)[25], and the International Nursing Coalition for Mass Casualty Education (general nurses)[29]. Unfortunately the competency requirements are inconsistent across the groups (Table 1). Further, no attempt has been made to validate if these competencies are correct and/or all-encompassing.

However, Townsend[2], author of the White House-commissioned Katrina Report, stated that during Hurricanes Katrina and Rita the required knowledge, skills and abilities of healthcare professionals differed from existing competency lists. The report states:

> Immediate public health and medical support challenges included the identification, triage, and treatment of acutely sick and injured patients; the management of chronic medical conditions in large number of evacuees with special health care needs; the assessment, communication and mitigation of public health risks; mortuary support; and the provision of assistance to State and local health officials to quickly reestablish health care deliver systems and public health infrastructures (p. 46).

Gaps in the Literature and Recommendations

The term emergency preparedness is a new dimension in the continuum of health care and public health services that has emerged without any explication. Consequently, the gaps in science to support this increasingly important component of care are considerable. Work needs to be accomplished on multiple fronts, but especially in standardizing core competencies for various responder disciplines and types. This information is needed to develop training programs with a variety of modalities with specific outcomes as well as the metrics to measure performance. To begin to accomplish this, we must first determine what emergency preparedness professional competencies are—what knowledge, skills and abilities are needed

during a hurricane response, an archetypal disaster that occurs nearly every year. Later studies might address whether these professional competences are the same or different in other types of emergency response; or, as Gebbie and Qureshi[17] suggest, that "the first step toward emergency preparedness is the identification of ***who*** needs to know ***how*** to do ***what***" (p. 50, emphasis added).

Emergency preparedness is emerging as a critical component of the U.S. health care system. No formal, systematic efforts have taken place to identify what constitutes emergency preparedness or what the core professional competencies are and whether they change by type of disaster. This study is proposed to begin to raise and document the answers to these knowledge gaps by specifically addressing emergency preparedness and which professional competencies were needed in responding to a hurricane.

PROBLEM

This study was designed to: (1) describe the characteristics of Hurricane Katrina and Rita healthcare responders; (2) determine which competencies in **basic clinical care** and **triage** were employed during the Katrina and Rita disasters; and (3) compare how RNs and MDs differed in their provision of basic clinical care and triage.

METHODS

An anonymous 544-item web-based questionnaire was constructed to systematically examine the response experiences of healthcare providers. Physicians (MDs) and Registered Nurses (RNs) were asked to complete the study designed to elicit information on their perceptions of the knowledge, skills, and abilities of two specific competency areas: basic clinical care and triage—required during their response. Both the professional categories as well as the specific competencies were selected as a result of a previous pilot study. In the pilot study, Slepski[6] found that of the 200 respondents, the largest categories of providers were

registered nurses (37%) and physicians (24%). The most frequent response skills reported were basic clinical care (39%) and triage (26%).

This study included sections on demographics, transition perceptions pre-, during and post event, the specific professional competency areas used as well as personal perceptions related to the response. Respondents were asked whether they performed basic clinical care and or triage during their disaster response. Those who responded affirmatively were presented with a list of specific skills. For each skill, respondents were asked three questions: whether they performed the specific skill at the disaster site (yes/no); to rate the amount of previous training in the skill using a 3-point Likert-type scale of (1) none, (2) some and (3) extensive; and, to rate their confidence in performing the skill using 5-point Likert-type scale ranging from not confident (1) to very confident (5). Finally, respondents were asked to rate the outcome of the overall response experience, as to whether the deployment had been a positive experience and whether the response had been a satisfying experience on the five point Likert-type scale (Figure 1).

Validity and Reliability of the Tool

Because at the time of the study, no comprehensive tool existed to measure the desired variables, draft items were assembled using seminal resource documents on competency, emergency response and the incident command system as well as position descriptions from major response organizations that outlined the required skill sets of physicians and nurses. An expert panel of ten established the content validity of the original competency questions by reviewing and ranking essential items for basic clinical skills and triage.

A pilot test of the draft tool was conducted using volunteers. Included in the group were physician and nurse disaster responders as well as persons who had never responded to ensure that terms were clear and understandable. Items were revised based on the first round of pilot testing. Volunteers then completed a second round of responses to establish test-retest

reliability. Correlations between the test-retest scores ranged from .853 -.936 indicating good reliability of the scale.

In the final version of the instrument, triage was defined as the medical screening of two or more patients to determine their relative priority for treatment. Basic clinical care was defined as those clinical interventions undertaken to stabilize and maintain a patient. For this instrument, basic clinical care does NOT include medication dispensing or immunization, resuscitation (emergency care, Basic Life Support, Advance Cardiac Life Support, a resuscitative action, acute care, critical care or intensive care) or wound care (care related to wound care or dressings, care of puncture wounds or sutures).

A total of 105 survey items specifically addressed the basic clinical care competencies while an additional 8 items addressed triage competencies. The 105 basic clinical skills were divided into ten sub-sections: assessment and follow-up (13 items); documentation (10 items); hydration (11 items); device management (15 items); procedures (16 items); patient education (7 items); physical care(8 items); mental health (4 items); technology use (16 items); and discharge planning and social assistance (5 items). Triage competencies addressed the triage of both medical emergencies and injuries and trauma for four populations—infants, children, adults and geriatrics. Each section (Basic care and Triage) was examined as a whole for internal consistency by calculating the overall Cronbach's alpha coefficient; in the case of basic clinical competencies each sub-section was also examined independently.

As examples, assessment and follow-up included all of the elements of an initial examination including physical assessment, labwork, X-ray and ordering procedures. Hydration included oral and intravenous methods and hydration monitoring. Device management included managing drains, casts, splints and urinary collection devices. Procedures included the application of devices, drawing blood or providing oxygen through a variety of methods, while physical care included bathing, skin care and turning; mental health included active listening,

providing mental health recommendations and referral to another resource; technology encompassed use of any battery powered or electronic machines or devices.

For basic clinical skills, coefficient alphas for the 105 items ranged from .136 to .710 with an overall clinical care scale score of .970 (mean number of skills performed 45.53; standard deviation (+) 22.676). Coefficient alphas for the 10 subscales ranged from .699 to .908. In the case of triage, coefficient alphas for the 8 items ranged from .713 to .864 with an overall score of .950 (mean number of skills performed 2.56; + 3.168). The overall and subscale scores indicate adequate to excellent reliability for all scales (Table 2).

Sample / Participants

In the absence of a central repository of responder names with contact information, usual methods of recruitment were not possible. Instead, the following major professional groups and responder organizations distributed recruitment announcements describing the study and survey availability: American Association of Colleges of Nursing; American Red Cross; Emergency Nurses Association; National Disaster Medical System; National Emergency Preparedness Education Coalition; National Nurse Emergency Preparedness Initiative; National Organization of Nurse Practitioner Faculties; US Public Health Service; the Veterans Administration and others. Responders who participated in the pilot study and who indicated a willingness to participate in future surveys also received a personal invitation to participate via an email address they supplied. Inclusion criteria for this convenience sample were: (1) Registered Nurse (RNs) or Medical Doctor (MD, DO); (2) 18 years of age or older; (3) who worked on-site in a disaster response capacity for either Hurricane Katrina or Rita in Alabama, Louisiana or Mississippi for a minimum of 14 consecutive days.

These particular events were selected because they triggered the largest natural disaster relief and recovery operations in United States history and created an unprecedented demand for relief healthcare services. Hurricane Katrina, a Category 5 hurricane, and Hurricane

Rita, a Category 4 hurricane, affected over one and a half million people located within approximately 90,000 square miles spanning the states of Louisiana, Mississippi, and Alabama. Over 770,000 persons were displaced and 89,000 persons (11.5%) evacuated to make-shift shelters. As a result of the hurricanes, the Gulf Coast medical infrastructure sustained extraordinary damage.

Data Collection

After Institutional Review Board (IRB) approval, an invitation to participate was sent out through professional and responder organizations to MDs and RNs who responded to Hurricane Katrina or Rita in the fall of 2007. A recruitment email outlining the purpose of the study was sent to each participant. The email included that participation was strictly voluntary; that subjects could decline to answer a question or stop at any time; that all questionnaire information would be kept confidential; and that no responses would be associated with the participant or his/her response organization. Participants had to read and agree to an informed consent before advancing to the survey. As a result, all information provided over the internet is anonymous and cannot be tied back to the respondent. To provide the same anonymity for those completing the survey as pencil and paper, an IRB-approved third party not associated with the study received the mailed-in surveys, and stripped off identifying information before forwarding the survey to the principal investigator and sending back the postage reimbursement. The survey was available on the University server from August 5th to November 7th 2007 for completion on-line or for paper-and-pencil download.

Data Analysis

To describe the characteristics of respondents, descriptive statistics were calculated for categorical variables. Frequencies, means and standard deviations were calculated from responses on the 3- and 5-point rating scales. Nominal categories were compared using

Pearson's Chi-square. All statistical tests were conducted using Statistical Package for the Social Sciences (SPSS) software (version 14.0, SPSS, Inc., Chicago, IL). All data were statistically analyzed at an alpha of .05 with 95% confidence interval.

RESULTS/ FINDINGS

A total of 256 persons attempted the survey, of these, 196 met all study inclusion criteria and were retained for data analysis. Included in the data are the responses of three persons who returned the paper and pencil form of the survey.

Of the respondents, 59% were women, 89% were white and 98% listed their ethnicity as not Hispanic or Latino. While ages ranged from 27 to 77, the largest group was between the ages of 50-59 (38%). Nurses comprised the largest professional group n=136 (69%), compared to physicians (n=60, 31%). The majority of respondents reported working full time (87%), in rural areas (52%), providing direct patient care (80%). Over 58% reported more than 20 years of practice with the largest proportion having 20-29 years of experience. The majority (73%) reported previous disaster or emergency response training, responding as a member of a response organization (78%) and having previous response experience (64%). Seventy-four percent reported that their response team required specific response training, with 63% reporting that this training was helpful.

During this response, 75% reported providing some type of direct patient care. The majority worked the longest time in a temporary health clinic (33%), special needs shelter (13%) or as a member of a medical strike team (11%) (Table 3).

Respondents were given a series of skill questions and asked if they had performed the skill on site (yes/ no) and then asked to rank previous training in the skill and their confidence level in performing the skill. Despite 25% of respondents reporting that they worked in administrative roles, over 67% of the total respondents reported that they performed basic clinical skills (n=132) and almost 44% reported performing triage (n=86).

Table 4 identifies the basic clinical care and triage skills most frequently and least frequently performed, the percentage of individual performing those skills along with whether respondents had prior training and their ranking of perceived confidence in performing the skill. The most frequently performed skills focused around assessment, such as assessing lung sounds and counting respirations and documentation such as an initial assessment or clinical care provided. Least performed individual skills centered around the use of specific devices or technology such as chest tubes with either a pleurovac or one-way valve a bench top urinalysis machine or an abdominal drain. Triage was most frequently performed on adults for medical issues and least commonly on infants for injuries.

When competency skills were examined by section, both MDs and RNs reported 100% training in basic clinical care overall, with MDs reporting training in all sub-sections and RNs training percentages ranging from 98% in Device management to 100% in Technology use. Physician reported 96% training in triage, while nurses reported 98%. Training means for those providing clinical care ranged from 1.74 for providing translation services to a high of 2.92 for taking a blood pressure using a manual cuff. Less than 3% of all 105 clinical care items (n=30 had a training mean of <2.0 (some training).Twenty items or 19% had a training mean of 2.0-2.5 and 81 (77%) had a training mean from 2.51- 2.92. indicating that most respondents who performed the skill had received prior training. For triage, the means ranged from 2.22 -2.72 again indicating that most respondents who performed triage had previously been trained.

Perceived confidence means ranged from a high of 4.97, $\pm$.16 for manually counting respirations, taking a blood pressure with a manual blood pressure cuff, and taking an oral temperature with a mercury thermometer to a low of 2.77, $\pm$1.52 for providing translation services for a non-English speaker. Respondents reported a confidence level of less than four (moderate confidence) in 8.6% of the items (n=9) and a score of greater than 4.5 for 61.9% of the items (n=65). For 13 items (12.4%), respondents reported a confidence level of 4.9, almost “extremely confident”).

Table 5 addresses the categories of skills most performed. Overall 67% of respondents performed a clinical skill and 44% performed triage. Assessment (63%) and Documentation (61%) were the most commonly performed clinical skill categories with Device management (44%) and Discharge planning (44%) the least common. There was no statistical difference between physicians and nurses on whether they performed basic skills or triage ($p>.05$) nor on any of the clinical skill subscales with the exception of hydration. A significantly larger percentage of nurses provided hydration compared to physicians (60% vs. 48%, $p=.026$).

The largest organized groups providing basic clinical care were the National Disaster Medical System (NDMS) (28%, n=37) and the US Public Health Service (USPHS) (17%, n=23). The largest group performing triage was NDMS (86%, n=31).

Finally, in regards to their ability to recall the hurricane events, over 73% reported it as “vivid”—I can remember most events exactly or “very vivid”—like it happened yesterday. Less than 3% reported their recall as “not so clear”.

DISCUSSION

The demographic characteristics of survey responders are consistent with anecdotal reports. The majority of the sample group (86%) was composed of experienced healthcare providers who reported 10 or more years of experience in their healthcare provider role. More importantly, over three-quarters (78%) of respondents reported that they had prior experience with disaster responses. Over 58% reportedly came from teams who required training prior to response.

In addition to the usually-recognized national teams, responders came as individuals or from; two major hospital corporations; two state nursing associations (California and Mississippi); three Federal departments and agencies (Health and Human Services, Homeland Security and the Veterans Administration); three international organizations (Project HOPE, Heart to Heart International and International Relief); three Urban Search and Rescue teams;

four Emergency Management Assistance Compact (EMAC) state organizations (Illinois, Indiana, Iowa and Mississippi); as well as six private hospitals. This is important because personnel from Federal departments or agencies and national teams, which are federalized upon activation, have already gone through a credentials verification process and have license reciprocity to any state or territory. As part of the EMAC process, compact states agree to accept the credentials of responding states' volunteers. All other responders (n=61 or 31%) would not have automatically had license reciprocity. As a result of responders arriving without the proper credentials, the Governors of all three states had to invoke emergency powers legislation accepting the licensure of multiple states of responders.

Members of the U.S. Public Health Service (USPHS) (47%), Medical Reserve Corps (MRC) (40%) and American Red Cross (33%) more often performed administrative duties, whereas members of the military (100%) and the NDMS (89%) were more likely to perform patient care duties. While this may be that the military and NDMS members usually function as clinicians in their daily jobs, deploy as a unit with their own patient care equipment and generally stay together as a unit, persons who deployed with other organizations with a less formal unit identity may have been easier to assign to administrative roles. These personnel could have performed administrative duties because they lacked clinical currency, familiarity with the provision of care in an austere environment, or even because of issue of seniority (rank) in the case of Public Health officers.

One hundred percent of the MRC, military and NDMS performed assessment and follow-up. Of interest, 88% of American Red Cross volunteers reported performing this task, although current Red Cross guidelines do not allow for the provision of direct patient care. Department of Health and Human Services provided documentation the lowest percentage of the time (67%). This may be because they deployed as individuals and may not have known about documentation requirements or existing documentation systems. Likewise, they were the group who least often reported involvement in hydration skills (33%). Members of NDMS were most

commonly involved in device management (37%), followed by performing procedures (33%), performing physical care (33%), providing mental health services (31%), using technology (33%), providing patient education (34%), and providing discharge planning and social services (33%). While this may be an aberration of the sample, it is more likely that NDMS members deploy with their own equipment and by standards are supposed to be self-sufficient in the provision of care of up to 250 patients a day for at least 72 hours[30]. Over their long history of existence, NDMS members have learned how to access community-based resources to refer patients for follow-up. They use a management support team model that provides liaison with the local community.

In a mass casualty situation, triage involves a brief assessment. As a result of the evaluation, patients are placed in one of four categories: immediate; delayed; minor; or, dead/dying. During a disaster, triage can be performed at any place where victims are located with little or no equipment, and usually involves a primary assessment as well as multiple secondary assessments based on the severity of the patient's injuries and the resources that are available. While a total of 86 respondents (44%) indicated that they performed triage, categorical assessments of patients were much smaller, ranging from 72 respondents performing adult medical triage to 22 performing infant injury or trauma triage. Given the large numbers of patients that required medical care and the scarcity of readily available medical resources, 44% of respondents performing triage seems extremely small. Of additional concern, only 51 respondents (59% of those performing triage and 26% of the total respondents) indicated that they used a triage tag, the most widely recognized method of documenting the triage status of the patient. This may reflect that tags were not available, that persons performing triage documented their decisions in another way or that no documentation of the triage decision took place. However, this could also reflect that providers were performing secondary and tertiary triage, as the patient moved throughout the treatment system, rather than the performance of primary triage. Opportunities for primary triage may have been

dependent on when responders arrived at the incident. If responders arrived early, just after the hurricanes struck, then it is likely that patients required an immediate triage decision. However, if responders arrived at the incident site later, or were providing temporary “clinic” type operations, the formal use of triage in the sense of “sorting” may not have been for the decision of if to provide care—a decision often required in large scale disasters, but rather to prioritize when and by whom patients were seen—more in keeping with normal patient care activities.

While both NDMS and the USPHS require triage training as part of their basic training for healthcare providers, they provided 19% (NDMS) and 10% (USPHS) of the overall triage that took place. Of interest, 44% of persons who deployed without an organization and 50% of those who deployed with “other” than the nationally recognized groups performed triage. It is of note that 94% of those without an organization and 100% of those from “other” organizations reported previous training in triage. What is unclear is whether their training was formal and would have included the requirement for documentation of triage decisions.

In terms of training, 41% of USPHS officers and 40% of NDMS members had completed all four of the Federal Emergency Management Agency trainings on Incident Command (IS 100 and IS 200), the National Incident Management (IS 700) and the National Response Plan (IS 800), required training for both groups. These trainings address the basic concepts of incident command—who does what, how groups relate to each other and chain of command. The National Incident Management systems speaks to how the national response is organized, while the National Response Plan addresses the concept of how the Nation will respond, outlining the roles of the federal departments and agencies in accomplishing 15 Emergency Response Functions—one of which is Public Health and Medical Response (ESF #8) until the responsibility of the Department of Health and Human Services. These trainings help members in the field to understand “who is charge” and “how do I fit in”. Of the nationally recognized organized groups, completion of at least one of these trainings ranged from 40% (military and Medical Reserve Corps) to 84% for NDMS.

Training frequencies, means and standard deviations were used to assess the amount of previous training and dispersal of that training across clinical care and triage items. Some items with the highest training frequencies and means were not performed frequently. For example, use of a bench side pregnancy test was performed by only 28 respondents, yet the overall training mean was 2.85, ±.36, indicating that most respondents had already had a significant amount of training in using this device previously. Similarly, respondents reported confidence means of 4.84, ±.59, reflecting that not only had they been trained but that they felt confident in performing the skill. Of interest however, was the item under mental health skill that asked if respondents had "held a hand or given a hug". While 104 respondents (53%) reported that they had performed the skill, prior training was low (2.3, ±.78) when compared to many items, yet the confidence mean was high 4.84, ±.43), indicating that extensive prior training was not needed to feel confident in performing a skill.

Reports of training indicate that respondents had some training, and in many cases extensive training in the surveyed skills. Similarly, most respondents reported at least moderate confidence, if not extreme confidence in the basic clinical care and triage competency skills examined. Rather than a competency training or confidence issue, disaster response instead seems to represent situational and organizational transitions that require the healthcare worker to adjust from the "knowns" found in their regular practice situation—facilities, equipment, supplies, staff, policies, procedures and routines—and perform in an austere disaster environment of unknowns. These results support findings from earlier work where responders described an abrupt change or transition from their everyday world in order to practice effectively at a disaster site[30]. Disaster response skills are different than those used daily in "usual" provider roles[6, 31].Weiner and others[32] contend that standard curricula do not prepare healthcare providers for emergency preparedness and response activities.

Said one responder, "As a *[group name removed]* volunteer I felt that we sent too many untrained volunteers or minimally trained volunteers that were unprepared for their

responsibilities". Said another "No attempt was made to put volunteers together based on experience or skill mix. *[I was]* critical care trained but taking care of skilled nursing home type patients". A nursing manager said "I was acting as team chief nurse as well as *[a]* mental health professional. It was difficult to manage team members who were having trouble handling the deployment". A nurse echoed, "It was a little frustrating at first. I was a nurse practitioner student, and an experienced clinical nurse specialist, but *[I]* spent the week giving immunizations because the personnel there did not feel comfortable with letting me carry out an advanced practice role. Still, it was a job that needed to be done, and nobody promised me that I'd get to pick my duties". Conversely, a nursing faculty who brought students said "It was a short learning curve to change our practices to meet the needs of the patients. The students were incredible at adapting".

Rather than deficits in training or confidence in their skill levels, responders in many cases, eluded to their personal performance comfort levels within the environment. For example, several respondents made comments about using unfamiliar equipment or supplies. One said that she knew how to use a glucometer to measure blood sugar levels, but the device that she had didn't match the strips that were available and she wasn't sure what to ask for to correct the situation. Another spoke about knowing how to start an intravenous, but having unfamiliar types of tubing available.

Said one, "As a first time experience to a major disaster, the modules we completed certainly assisted in being prepared in SOME aspects. However due to the level of destruction, and the fact that we went in prior to the Katrina event and went through it was more frightening than showing up after the fact. I was glad to be able to participate and think my 20 plus years of clinical and administrative experience with D/C planning case management, trauma, med/surg certainly made me feel more confident. The team was very supportive and we worked well together to make this system function as efficiently as we could". Said another "Healthcare providers at all levels were not comfortable with caring for pediatric patients and had little

experience in assessing and triaging them. Little equipment was available for adequately assessing and caring for children and infants". Yet another said, "I had no idea what I was getting into, what would happen next and if I would survive the event. I was glad to leave because I didn't feel safe and didn't feel comfortable doing what I was asked to do--meat ball medicine. Looking back, I'm glad I had the experience, but no one should ever go to this type of an event by themselves and not be prepared".

Finally, one question seems to have been misinterpreted. While the discharge planning question read "I provided translation services (patient other than English as a first language)" and was intended to mean, my patient couldn't understand me or my recommendations so I obtained a translator. It would appear that the low training and confidence means (training 1.74, $\pm$.77; confidence 2.77, $\pm$1.52) may reflect low confidence of responders in providing translation services themselves, rather than making the arrangements or finding a translator. Most training programs include several curricula hours devoted to assuring cultural competency.

Results from this study indicate that respondents were well trained and confident in the competencies of basic clinical care and triage. Deficits seemed instead to come from functioning within the unique challenges of a disaster environment. Current disaster training focuses on teaching competencies, rather than the knowledge, skills and abilities needed to function within an austere environment and without the usual services found in most providers' regular work situations.

Results can be used to: improve training to specifically address the unique aspects of a disaster setting; improve threat briefings prior to leaving home- and arrival on site briefings- to include incident-specific information and improve assimilation into the disaster site; revise position descriptions for disaster responders to more accurately address knowledge, skills and abilities required in a austere disaster site; and, standardize simple documentation systems to allow new responders to be immediately productive. Further study is needed on how to more effectively prepare individuals for a disaster response.

LIMITATIONS

This study has several important limitations. Because there was no central repository of responder names and contact information and responders came from all over the United States and from as well from other countries, there was no true list of responders to contact. As a result, using a web-based survey to access responder MDs and RNs resulted in convenience sample and may have introduced a number of unknown biases. As a result, there is limited generalizability from this convenience sample of one event of responders to either other types of emergency response events or to the larger population of all emergency preparedness responders. While an anonymous response affords the best opportunity to assess self-reports of training and perceptions of competency, it does not allow for verification of training or training hours. Likewise, it was not possible to verify if respondents completed the survey more than once, although there were no duplicate responses noted. However, this is unlikely due to the length of the survey. Comparison of responders from different organizations with different backgrounds, experience and expectations was difficult. Differences between professional categories and responder groups may be due to small sample numbers. A larger study with a more inclusive questionnaire might generate richer data. However, the use of multiple response groups and response locations and the inclusion of two types of providers increased the amount of information obtained.

While recollections approximately 24 months after the event may not be accurate, over 73% of respondents rated their recollection as vivid or very vivid.

Finally, disaster research is difficult to accomplish. Research protocols, instruments and other materials need to be event-specific and require time to prepare. Funding organizations and Institutional Review Boards are often reluctant to rapidly review and approve protocols in the midst of an incident, and access to responders, victims or survivors may be difficult, resulting in sampling biases[33]. In addition, many regard all disaster victims as vulnerable

populations[34]. Several authors[35, 36] suggest that research focused on disaster situations often must be performed retrospectively to improve care and prevent repeated mistakes.

Nonetheless, this study represents the best information available to date about Hurricane Katrina and Rita responders. It was obtained from 196 experts from every part of the nation and provides useful and consistent information. Results begin to demonstrate consistent themes that help to provide a general base for understanding the emergency response phenomenon.

CONCLUSIONS

An emerging and critical component of the U.S. health care system is emergency preparedness. Up to this time, no systematic examination of the preparedness of health care providers and their response capabilities during a large scale response has been conducted and reported. As a result, very little is known about what knowledge, skills and abilities are needed in a disaster.

This study begins to raise and document the answers to these questions by specifically addressing emergency preparedness and professional competency in responding to a hurricane. There was no statistical difference between physicians and nurses on whether they performed basic skills or triage ($p>.05$). It found that respondents were well trained and confident in performing basic clinical care and triage competencies. Deficits instead seemed to come from functioning within the unique challenges of a disaster environment, knowledge, skills and abilities not usually addressed in current disaster and emergency response training.

As healthcare leaders, we must ask ourselves how do we plan for the next large scale incident and how do we prepare and equip volunteer healthcare providers to function in austere disaster environments? More extensive research is needed to determine what challenged their emergency preparedness functionality and what can be done to improve better prepare them to respond.

“I remember when I was allowed to drive to Biloxi to see my mom several days after the storm, [and] seeing crews from all over the country. It still makes me cry like a baby to think of all those strangers coming to our rescue. I will never forget that feeling”.

A Hurricane Katrina Victim

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Table 1: Examples of existing competency recommendations

Physicians/EMTs (OEP/ACEP)[24]	Agency for Healthcare Research and Policy[37]	Registered Nurses (INCMCE)[29]	Public Health Workers (CDC)[26, 28]
1. Describe the current level of preparedness as evidenced by the private, local state, public health and Federal efforts. 2. Compare the characteristics of an intentional biological attack with those of an endemic disease outbreak. 3. Explain how treatment in place and use of alternative care facilities might be used. 4. Practice safety-first to avoid becoming a victim. 5. Recognize the triggers that precipitate reporting and investigation of suspected terrorist events. 6. Demonstrate proper use of Personal Protective Equipment (PPE). 7. Describe the need for a unified command system among response groups.	1. General disaster responses, including an introduction to altered standards of care. 2. Legal and ethical basis for allocating scares resources in a MASCAL event. 3. Orientation on how incident management would work in a MASCAL. 4. How to treat populations with special needs. 5. How to recognize the signs and symptoms of specific hazards 6. How to treat specific conditions. 7. How to recognize and manage the effects of stress on themselves and their patients	1. Critical thinking: Use an ethical and nationally approved framework to support decision-making and prioritizing needed in disaster situations. 2. Assessment: Perform an age-appropriate health assessment. 3. Technical Skills: Demonstrate the safe administration of medicines. 4. Communication: Describe the local chain of command and management system for emergency response during an MCE.	1. Describe the public health role in emergency response in a range of emergencies. 2. Describe the agency chain of command in emergency response. 3. Identify and locate the agency emergency response plan. 4. Describe his/her functional roles and responsibilities and demonstrate his/her roles in regular drills 5. Demonstrate correct use of all communication equipment used for emergency communication. 6. Describe communication roles 7. Identify limits to knowledge, skills and authority and identify key system resources for referring matters. 8. Apply creative problem solving and flexible thinking and evaluate effectiveness of all actions taken 9. Recognize deviations from the norm and describe appropriate action.

Table 2: Reliability of the competency questions expressed as Cronbach's alpha for each of the sub-sections and for the overall basic clinical care and triage scales

Scales of Two Specific Competencies- Basic Clinical Care and Triage		**N of Items**	**Cronbach Alpha**
Basic Clinical Care			
Category	Example skill		
Assessment and follow-up	Lung sounds	13	.837
Documentation	Initial assessment	10	.895
Hydration	Perform "pinch test"	11	.859
Device Management	Nasogastric tube	15	.860
Procedures	Eye irrigation	16	.908
Patient education	Cast care	7	.874
Physical care	Bed bath	8	.714
Mental health support	Active listening	4	.791
Technology Use	12-lead EKG	16	.886
Discharge planning/ Social Assistance	Reported a communicable disease	5	.699
Total Basic Clinical Care Questions		**105**	**.970**
Triage		8	.950
Total Triage Questions		**8**	**.950**

Table 3: Characteristic of responders by professional group and overall expressed as number and percentage.

Variables	MDs n=60		RNs n=136		Total N=196	
	n of MD's	% of MD's	n of RN's	% of RN's	n Overall	% Overall
Demographics						
Female Gender	14	(23%)	102	(75%)	116	(59%)
Age >40	48	(80%)	111	(82%)	159	(81%)
Years of Practice >20	28	(47%)	86	(63%)	114	(58%)
Caucasian Race	48	(80%)	126	(93%)	174	(89%)
Work Status						
Full Time	52	(87%)	118	(87%)	170	(87%)
Rural practice area	28	(47%)	73	(55%)	101	(52%)
Provide direct patient care at usual job	51	(85%)	106	(78%)	157	(80%)
Deployment Experience						
Deployed with a formal organization	47	(78%)	105	(77%)	152	(78%)
Previous response experience	38	(63%)	87	(64%)	125	(64%)
Previous disaster training	45	(75%)	97	(71%)	142	(73%)
Previous disaster training helpful	37	(62%)	86	(64%)	123	(63%)
Provided Patient Care this deployment	46	(77%)	102	(75%)	148	(75%)

Table 4: Clinical skills performed with the greatest and least frequency with prior training and perceived confidence ratings for all respondents

		Performed skill	Prior training	Perceived Confidence in performing skill*	
Skill category	**Specific Skill**	%	%	Mean	S.D.
Basic Clinical Care: Most frequently performed skills					
Assessment	Clinically assessed lung sounds	60%	99%	4.87	0.43
Assessment	Manually counted respirations	57%	99%	4.98	0.15
Documentation	Document initial assessment	57%	99%	4.95	0.25
Documentation	Document past medical history	57%	98%	4.92	0.33
Assessment	Obtained a medical history	56%	98%	4.88	0.42
Documentation	Document allergies	56%	98%	4.96	0.20
Assessment	Took a blood pressure with a manual cuff	56%	99%	4.98	0.16
Documentation	Document previously prescribed medications	55%	98%	4.95	0.22
Basic Clinical Care: Least frequently performed skills					
Procedures	Applied traction	7%	83%	3.85	1.38
Technology Use	Used a "bench top" or "bedside" strep throat test	7%	80%	4.0	1.42
Device	Chest tube with a pleurovac	6%	94%	4.28	1.03
Physical care	Provided a shower	6%	81%	4.06	1.27
Physical care	Provided nutrition through a gastrostomy tube	6%	90%	4.22	1.10
Device	Abdominal drain (tube with a collection device)	5%	95%	4.35	0.97
Technology Use	Used a "bench top" or "bedside" urinalysis (machine)	4%	80%	3.19	1.67
Device	Chest tube with a one-way valve	3%	93%	4.11	1.15
Triage: All skills In order of frequency performed					
Adults	Medical emergencies	37%	98%	4.68	0.56
	Injuries or trauma	34%	98%	4.62	0.64
Geriatrics	Medical emergencies	33%	97%	4.57	0.61
	Injuries or trauma	28%	97%	4.55	0.62
Children	Medical emergencies	23%	93%	4.18	1.08
	Injuries or trauma	23%	93%	4.25	1.06
Infants	Medical emergencies	20%	90%	4.14	1.07
	Injuries or trauma	14%	88%	3.95	1.24

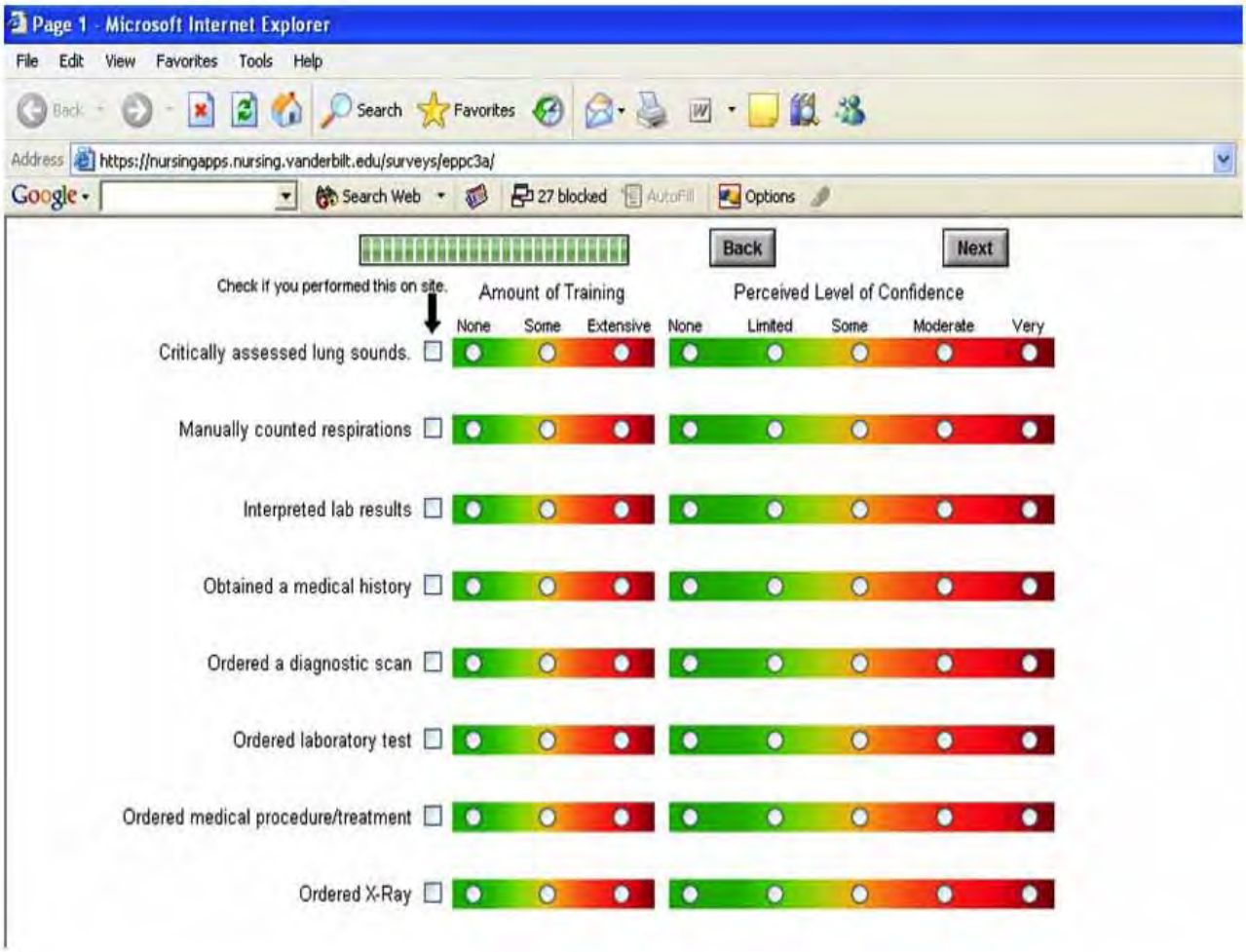
*Perceived Confidence in Performing Skills Respondents Attached to Each Item: 1= No Confidence 2=Limited Confidence 3= Some Confidence 4=Moderate Confidence 5= Extensive Confidence

Table 5: Percentage (%) of all respondents who reported performing listed types of skills; of those who performed the skill, percentage of those reporting prior training and mean with (SD) of perceived confidence in performing the skill.

	OF ALL RESPONDENTS			OF THOSE WHO PERFORMED THE SKILL			
	Percentage who Performed Skill			Percentage with prior training		Mean Perceived Confidence*	
	Overall	MD	RN	MD	RN	MD	RN
Clinical Skills	**67%**	67%	68%	100%	100%	4.6 (.38)	4.6 (.39)
Assessment /follow-up	**63%**	62%	64%	100%	99%	4.9 (.23)	4.7 (.47)
Documentation	**61%**	58%	63%	100%	99%	4.9 (.25)	4.9 (.28)
Mental health support	**58%**	55%	60%	100%	99%	4.7 (.46)	4.8 (.43)
Hydration	**57%**	48%	60%	100%	99%	4.6 (.56)	4.7 (.48)
Technology Use	**55%**	48%	58%	100%	100%	4.4 (.73)	4.5 (.55)
Procedures	**53%**	52%	54%	100%	99%	4.6 (.57)	4.6 (.56)
Patient education	**52%**	47%	54%	100%	99%	4.7 (.42)	4.7 (.56)
Physical care	**48%**	45%	49%	100%	99%	3.92 (.98)	4.67 (.52)
Device Management	**44%**	38%	47%	100%	98%	4.3 (.61)	4.5 (.61)
Discharge planning	**44%**	45%	43%	100%	99%	4.1 (.72)	3.9 (1.04)
Triage	**44%**	37%	47%	96%	98%	4.6 (.62)	4.4 (.77)

*Perceived Confidence in Performing Skills Respondents Attached to Each Item: 1= No Confidence 2=Limited Confidence 3= Some Confidence 4=Moderate Confidence 5= Extensive Confidence

Figure 1: Screen shot example of competency performance, training and confidence



Abstract Accepted
Oral Presentation

Sigma Theta Tau
19th International Nursing
Research Congress
Focusing on Evidence-
Based Practice

Deadline Reached

The deadlines for paper submissions and modifications for this program have been reached.
View Submission (no changes allowed.)

Paper #39999

19th International Nursing Research Congress Focusing on Evidence-Based Practice

Emergency Preparedness and Professional Competency among Healthcare Providers during Hurricanes Katrina and Rita

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Background: No systematic examination of the preparedness of healthcare providers and response capabilities during a large scale disaster has been conducted. As a result, very little is known about what knowledge, skills and abilities, or professional competencies are needed—information critical for designing effective training content. The objective of this IRB-approved study was to examine the issue of emergency preparedness and professional competencies in actual disaster responders.

Methods: In fall 2007 an invitation to participate was sent out through professional and responder organizations to MDs and RNs over the age of 18 who responded to Hurricane Katrina or Rita in Alabama, Louisiana or Mississippi. Participants were asked to complete an anonymous 544-item web-based questionnaire designed to elicit information on their perceptions of the knowledge, skills, and abilities required during their response.

Preliminary Results: Of the 196 respondents, (31% - MDs, 69% - RNs) 76% provided direct patient care. Despite the fact that 78% deployed as part of an organized group (25% USPHS) the response transition was difficult as prior to leaving only 43% knew what role they would perform; what professional items to take (38%); how to protect themselves (27%); or what their decision-making authorities were (37%). Only 40% had someone available to answer questions or demonstrate something they did not know or felt uncomfortable doing despite 81% identifying having someone available as important/very important.

Conclusion: Responders often end up performing roles/tasks for which they are not prepared. Further study is needed on how to better prepare individuals to respond.

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Program Selection: Research Sessions – Oral Paper & Posters
Topic Selection: Nursing Workforce Competencies
Research: Completed Work/Project
Presentation Format: Podium
Learner Objective #1: The learner will be able to Identify common characteristics of disaster responders
Learner Objective #2: The learner will be able to Identify three competencies needed for disaster response

Keywords: competency, disaster response, emergency preparedness

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Abstract Accepted
Poster Presentation

2008 US Public Health Service Scientific and Training Symposium ‘Public Health Strategies for the New Millennium’

2008 USPHS Scientific & Training Symposium ***'Public Health Strategies for the New Millennium'***
June 9-12, Tucson, Arizona

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Poster Presentation

Title: Emergency Preparedness and Professional Competency Among Health Care Providers During Hurricanes Katrina and Rita

Author(s): CAPT Lynn Slepski

Abstract:

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Conclusion: Responders often end up performing roles/tasks for which they are not prepared. Further study is needed on how to better prepare individuals to respond.

Uniformed Services University of the Health Sciences

Graduate School of Nursing

Request for Dissertation Defense Date

for the Doctor of Philosophy Degree (Form F)

Name of Student: Captain Lynn A. Slepski

Request for doctoral dissertation defense date of the student named above: April 9, 2008

The title of the dissertation is *Exploring the Emergency Preparedness Competencies of Disaster Healthcare Responders During Hurricanes Katrina and Rita*

The Dissertation Advisory Committee and Readers can appear on this date:

Signature, Chairperson	Dorraine D. Watts, PhD, RN Printed Name	(Yes) or No
Signature, Committee Member	Betsy Weiner, PhD, RN, FAAN Printed Name	(Yes) or No
Signature, Committee Member	Christine Kasper, PhD, RN Printed Name	(Yes) or No
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Approval/Disapproval

Signature: _____ Date: 4/9/08

Director, Doctoral Program

Approval/Disapproval

Signature: _____ Date: 4/10/08

Dean, Graduate School of Nursing, USUHS

Dissertation Defense

CAPT Lynn Slepski
April 9, 2008

1

Title

Emergency Preparedness and Professional Competency Among Health Care Providers During Hurricanes Katrina and Rita

2

Dissertation Committee

- Chair: Dorraine D. Watts, PhD, RN
- Members:
  - Christine E. Kasper, PhD, RN, FAAN, FACSM
  - Betsy Weiner, PhD, RN, FAAN
- Consultant: Jeff Gordon, PhD
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  - Patricia Hinton Walker, PhD, RN, FAAN
  - Karen Elberson, PhD, RN
  - Robert Bienvenu II, PhD

3

Introduction

- **September 2005, Hurricane Katrina (Category 5)**
- **Followed by Hurricane Rita (Category 4)**
  - Affected 1.5 million people
  - Approximately 90,000 square miles
  - 770,000 persons displaced
  - 89,000 evacuated
  - Medical infrastructure crumbled
- Largest natural disaster relief and recovery operations in history
- Unprecedented demand for healthcare services

4

Background & Significance

- **Emergency Preparedness (EP)**
  - Term frequently used, but undefined and inconsistently applied → Concept analysis (Slepski, 2005)
- **The Literature IS CLEAR**
  - Healthcare providers are the 1st line of defense
  - Dearth of research studies examining EP or professional competency in ANY provider type
  - Responding to disasters is different than working in the familiar day-to-day environment
  - No clearly defined standards or guidelines or single source of authority for content or curricula → unfocused training and education efforts and great debate

5

Background & Significance

Related concept—Competency

- Wright (1998) "the knowledge, skills and abilities (KSAs) to carry out a job" (p. 7)
- Several have suggested the development of formal emergency preparedness educational core competencies (n~10) / mandatory CE (Slepski, 2005)
- According to the White House Katrina Report
  - **Required KSAs differed from existing competency lists**

Result: Very little is known about what knowledge, skills and abilities are needed in each disaster phase

6

Exploratory Pilot

- 2006 IRB-approved exploratory Pilot—focus for dissertation
- 15 interviews and 200 anonymous surveys at 2 national volunteer responder conferences where healthcare professionals who deployed to Katrina/Rita were likely to be in attendance
- Results (Slepski, 2007)
  - RNs (45%) and MDs (24%)
  - Basic clinical care (39%)** and triage (26%)
  - Least prepared--only 22% said they did not know a specific skill (i.e. Personal Protective Equipment)
    - Described was an **abrupt change or transition** from their every day practice worlds
    - **Period of acclimation** where they needed to learn about the people, physical and social environments around them

7

Federal Relevance

- Hurricanes Katrina and Rita were the first real tests of the surge concept → failure
- Emergency preparedness is increasingly "big business" ($13 billion FYs 02 -04) → no evidence addressing appropriate requirements
- The nursing science concerning the effect of EP training on the practice of emergency responders is in its infancy
- This study begins to raise questions and document answers that specifically address emergency preparedness and professional competency in responding to a hurricane → frequent event

8

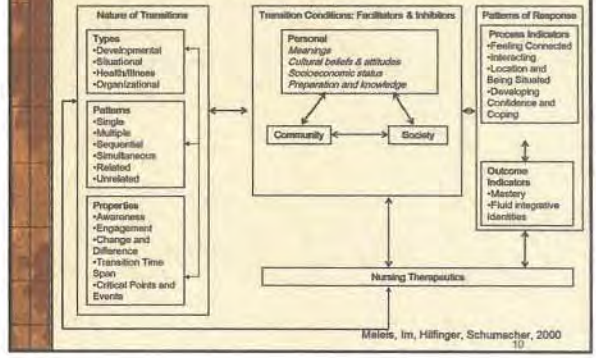
Study Objectives

Identify and analyze critical issues related to emergency preparedness for individual providers by:

1. Exploring and describing the characteristics of healthcare responders;
2. Exploring provider experiences using Meleis' Transition Framework; and
3. Assessing specific competencies that were employed during those disasters.

9

Conceptual Model



Meleis, Im, Hilfinger, Schumacher, 2000

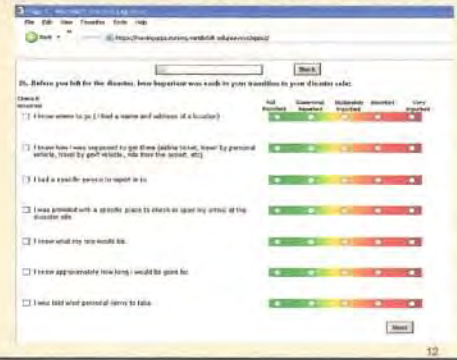
10

Methods – Design

- Descriptive/ Exploratory
- Respondents invited to complete an IRB approved web-based questionnaire
  - Demographics
  - Transition perceptions pre-, during and post event
  - Two specific competency areas required during their response—basic clinical care and triage
  - Two transition outcomes—positive experience/ satisfying experience

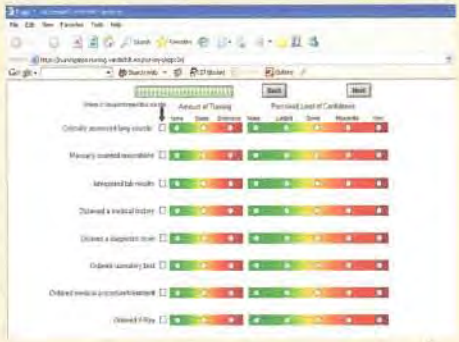
11

Instrument—Transition Information



12

Instrument—Specific Competencies



13

Methods – Survey

The Phase II survey

- 544 item, web-based survey
- Designed to capture information on transitions and examine two specific emergency preparedness competencies (basic clinical care and triage)
- Informed by the Pilot Study

- Beta testing—can complete <40 minutes
- High Validity and Reliability (Cronbach's Alpha)
  - Transition (n= 55) 0.956
  - Basic clinical care (n=105) 0.970
  - Triage (n= 8) 0.950

14

Methods – Subjects

- No central repository of responder names with contact information
- Major professional groups and responder organizations distributed recruitment announcements describing the study and survey availability; Pilot study volunteers
- Inclusion criteria:
  - Healthcare professional [RN and MD]
  - Worked on-site in a disaster response for either Hurricane Katrina or Rita in Alabama, Louisiana or Mississippi.
  - Worked at the disaster site for a minimum of 14 consecutive days (two weeks)
  - Age 18 or older

15

Data Analysis

- Demographics
  - Descriptive statistics
- Likert scales
  - Frequencies, means and standard deviations for continuous variables
- Nominal categories
  - Pearson's Chi-square
- Demographic/Transition factors & outcome correlations
  - Spearman's Rank Order Correlation
- All data were statistically analyzed at an alpha of .05 with 95% confidence interval

16

Results - Demographics

Variables	MDs		RNs		Total	
	60	(31%)	136	(69%)	196	(100%)
Gender						
Female	14	(23%)	102	(75%)	116	**(59%)**
Age in Years (Range 27-77)						
50-59	21	(37%)	51	(39%)	72	(38%)
Years of Practice (Range 1-50)						
20-29 years	19	(32%)	51	(37%)	70	**(36%)**
Usual Work Status						
Full Time	52	(87%)	118	(87%)	170	(87%)
Usual Work Area						
Rural	28	(47%)	73	(55%)	101	(53%)
Deployment Experience						
Deployed with a formal organization	47	(78%)	105	(77%)	152	**(78%)**
Previous response experience	38	(73%)	87	(64%)	125	**(64%)**
Formal Training in Disasters/ Emergency Response						
Previous disaster training	45	(75%)	97	(71%)	142	**(73%)**
Previous disaster training helpful	37	(62%)	86	(64%)	123	**(63%)**
Ability to Recall Events						
"Vivid" or "Very Vivid"	32	(74%)	82	(73%)	114	**(73%)**

17

Results – Transition Items

Ranked Transition Question by Transition Period			Level of Importance Respondents Attached to Each Item 1= Not Important 4= Important 5= Very Important	
	No	Yes	Mean	S.D.
MOST Important Items				
Before Event				
I knew how I was supposed to get there	51 (25.9%)	130 (66%)	4.30	.996
My family or friends had an emergency contact number for me	101 (51.3%)	80 (40.6%)	**4.23**	1.049
At the Disaster Site				
I received a situation briefing (told what was happening) upon my arrival	79 (40.1%)	102 (51.8%)	4.23	.873
I received a daily update of new information	82 (41.6%)	99 (50.3%)	4.20	.808
Before Leaving the Disaster Site				
I briefed my replacement	71 (36%)	110 (55.8%)	4.28	1.082

18

Results – Transition Items

Ranked Transition Question by Transition Period	No	Yes	Level of Importance Respondents Attached to Each Item (1= Not Important, 4= Important, 5= Very Important) Mean	S.D.
LEAST Important Items				
Before Event				
I knew what the eating arrangements were (catered meals, Meals Ready-to-Eat, that I should bring my own food, etc.)	130 (66.0%)	51 (25.9%)	**3.22**	1.274
knew what the sleeping arrangements were (a hotel, a building, a tent, availability of a shower, etc.)	103 (52.3%)	78 (39.6%)	**3.22**	1.274
At the Disaster Site				
I kept a daily log of personnel	121 (61.4%)	60 (30.5%)	3.30	1.492
I was provided with a code of conduct (professional conduct, no drugs or alcohol, where to report concerns, etc.)	123 (62.4%)	58 (29.4%)	3.17	1.380
I was provided a list of acronyms	169 (85.8%)	12 (6.1%)	2.68	1.385

19

Results – Transition Correlations

(n=156)	"My Response Experience Was..." Positive	Satisfying
Before Event		
I knew approximately how long I would be gone		.161
I was told what copies of credentials to take (ex: license, BLS)		.248*
I had a point of contact while I was traveling to my disaster destination		**.172**
I had a specific person to report in to	.165	.191
I knew what my role would be	.202	.198
I knew what the sleeping arrangements were	**.205**	
I knew what the eating arrangements were	**.168**	
At the Disaster Site		
I was told what the chain of command was		.174
I received a situation briefing upon arrival		.205
Someone provided me with an orientation to the physical layout of the organization		.205
I was told how to protect myself		.188
I was told what my work shift would be		.170
I knew who my supervisor was at all times		**.208***
I was told what the levels of my decision-making authorities were		.179
I was told about safety procedures		.185
I was provided with Personal Protective Equipment (PPE)		.190
I was instructed on how to use PPE		.191

All correlations significant at p<.05; (*) correlation significant at p<0.01 level, (2-tailed)

20

Results – Transition Correlations

(n=156)	"My Response Was a..." Positive Experience	Satisfying Experience
At the Disaster Site		
I was provided with a specific role to accomplish	.157	.170
I was told what to do in an emergency	.167	.215*
I was told about equipment/supply levels (how much on hand/ next delivery)	.168	.199
I was told how equipment/ supplies were ordered	.180	**.252***
There was always someone available to answer a question or show me something that I felt uncomfortable about	**.242***	**.310***
I kept a daily log of personnel	.199	.221*
I kept a daily log of events	.167	.220*
I was a supervisor	.191	
Before Leaving the Disaster Site		
I provided follow-up contact information for myself	.215*	.178
I was provided with a point of contact for questions or concerns	.229*	.197
I had a chance to talk about what happened with others (i.e. debriefing)	**.230***	**.251***

All correlations significant at p<.05; (*) correlation significant at p<0.01 level, (2-tailed)

21

Quote

"I got a twenty minute orientation, and then, with no experience or training was left in charge of a whole clinic! I didn't know the people, the equipment, the system or "what worked". I just gave it my best and told my staff that I was willing to listen to their suggestions. I found myself trying to do things that usually my nurses or techs do for me--it was HARD! I really didn't know what I was doing! I worried that I was doing the right thing, making the right decisions and not making things worse…"

22

Basic Clinical Skills—Greatest Frequency

		Performed skill	Prior training	Perceived Confidence in performing skill 0= No Confidence 5=Very Confident	
Skill category	**Specific Skill**	%	%	Mean	S.D.
Basic Clinical Care: Most frequently performed skills					
Assessment	Clinically assessed lung sounds	60%	99%	4.87	0.43
Assessment	Manually counted respirations	57%	99%	4.98	0.15
Documentation	Document initial assessment	57%	99%	4.95	0.25
Documentation	Document past medical history	57%	98%	4.92	0.33
Assessment	Obtained a medical history	56%	98%	4.88	0.42
Documentation	Document allergies	56%	98%	4.96	0.20
Assessment	Took a blood pressure with a manual cuff	56%	99%	4.98	0.16
Documentation	Document previously prescribed medications	55%	98%	4.95	0.22

23

Basic Clinical Skills—Least Frequency

		Performed skill	Prior training	Perceived Confidence in performing skill 0= No Confidence 5=Very Confident	
Skill category	**Specific Skill**	%	%	Mean	S.D.
Basic Clinical Care: Least frequently performed skills					
Procedures	Applied traction	7%	83%	3.85	1.38
Technology Use	Used a "bench top" or "bedside" strep throat test	7%	80%	4.0	1.42
Device	Chest tube with a pleurovac	6%	94%	4.28	1.03
Physical care	Provided a shower	6%	81%	4.06	1.27
Physical care	Provided nutrition through a gastrostomy tube	6%	90%	4.22	1.10
Device	Abdominal drain (tube with a collection device)	5%	95%	4.35	0.97
Technology Use	Used a "bench top" or "bedside" urinalysis (machine)	4%	80%	3.19	1.67
Device	Chest tube with a one-way valve	3%	93%	4.11	1.15

24

Results – Basic Clinical Skills

	OF ALL RESPONDENTS			OF THOSE WHO PERFORMED THE SKILL			
	Percentage who Performed Skill			Percentage with prior training		Mean Perceived Confidence	
	Overall	MD	RN	MD	RN	MD	RN
Clinical Skills	67% (n=132)	67%	68%	100%	100%	4.6 (.38)	4.6 (.39)
Assessment /follow-up	63%	62%	64%	100%	99%	4.9 (.23)	4.7 (.47)
Documentation	61%	58%	63%	100%	99%	4.9 (.25)	4.9 (.28)
Mental health support	58%	55%	60%	100%	99%	4.7 (.46)	4.8 (.43)
Hydration	57%	48%	60%	100%	99%	4.6 (.56)	4.7 (.48)
Technology Use	55%	48%	58%	100%	100%	4.4 (.73)	4.5 (.55)
Procedures	53%	52%	54%	100%	99%	4.6 (.57)	4.6 (.56)
Patient education	52%	47%	54%	100%	99%	4.7 (.42)	4.7 (.56)
Physical care	48%	45%	49%	100%	99%	3.9 (.98)	4.7 (.52)
Device Management	44%	38%	47%	100%	98%	4.3 (.61)	4.5 (.61)
Discharge planning	44%	45%	43%	100%	99%	4.1 (.72)	3.9(1.04)

25

Results – Triage

		Performed skill	Prior training	Perceived Confidence in performing skill 0= No Confidence 5=Very Confident	
Skill category	Specific Skill	%	%	Mean	S.D.
Triage: All skills in order of frequency performed					
Adults	Medical emergencies	37%	98%	4.68	0.56
	Injuries or trauma	34%	98%	4.62	0.64
Geriatrics	Medical emergencies	33%	97%	4.57	0.61
	Injuries or trauma	28%	97%	4.55	0.62
Children	Medical emergencies	23%	93%	4.18	1.08
	Injuries or trauma	23%	93%	4.25	1.06
Infants	Medical emergencies	20%	90%	4.14	1.07
	Injuries or trauma	14%	86%	3.95	1.24

26

Results – Triage

	OF ALL RESPONDENTS			OF THOSE WHO PERFORMED THE SKILL			
	Percentage who Performed Skill			Percentage with prior training		Mean Perceived Confidence*	
	Overall	MD	RN	MD	RN	MD	RN
Triage	44% (N=58)	37%	47%	90%	88%	4.6 (.52)	4.4 (.77)

27

Quote

"I had no idea what I was getting into, what would happen next and if I would survive the event. I was glad to leave because I didn't feel safe and didn't feel comfortable doing what I was asked to do--meat ball medicine. Looking back, I'm glad I had the experience, but no one should ever go to this type of an event by themselves and not be prepared".

28

Limitations

- Use of a convenience sample
- Anonymous responses allow for best self-reports of training and perceived competency
- Comparisons difficult
- Small sample numbers (n=196)
- Nearly 24 months from the incident
- Disaster research is difficult to accomplish

29

Conclusion

- This study begins to raise questions and document answers that specifically address emergency preparedness and professional competency in responding to a hurricane
- Responders were well trained and confident in performing the two competencies
- Difficulty →Abrupt change from everyday practice required in order to perform effectively at a disaster site
- Responders often made the transition without adequate support or information →issues with unique challenges of disaster environment
- Current disaster training focuses on teaching skills, rather than how to function in a disaster setting

30

Future Research

- Some evidence that transition outcomes identified by Meleis can be positively influenced in a disaster response through patterns of response—methods to make the transition easier.
- Further study is needed on how to more effectively prepare individuals for a disaster response.
  - Address the unique aspects of a disaster setting
  - Improve/ include incident-specific information to improve assimilation into the disaster site
  - Revise position descriptions for disaster responders to more accurately address knowledge, skills and abilities required in a austere disaster site; a

31

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- **Slepski, L.A.,** Watts, D.D., & Weiner, E. (Submitted). Exploring the Emergency Preparedness of Disaster Healthcare Responders Using the Meleis' Transitions Framework. *Advances in Nursing Science.*
- **Slepski, L.A.,** Watts, D.D., & Weiner, E. (Submitted). Exploring the Emergency Preparedness Competencies of Disaster Healthcare Responders During Hurricanes Katrina and Rita. *Prehospital and Disaster Medicine.*

32

Questions

33

Uniformed Services University of the Health Sciences
Graduate School of Nursing

Report of Dissertation Defense for the Doctor of Philosophy Degree (Form H)

Title of the dissertation:

Exploring the Emergency Preparedness Competencies of Disaster Healthcare Responders During Hurricanes Katrina and Rita

The decision of the Dissertation Committee is:

PASS
A. Both the dissertation and the oral defense are satisfactory: ✓
B. Minor changes are recommended by the Dissertation Advisory Committee that are to be made to the satisfaction of the Dissertation Chairperson: _____

DEFER
A. Major changes in the dissertation are required. Changes must be made to the satisfaction of the Dissertation Chairperson: _____
B. Major changes in the dissertation are required. Changes must be made to the satisfaction of the Dissertation Advisory Committee and at that time the oral defense will be rescheduled: _____

FAIL
Neither the oral performance nor the dissertation are adequate: _____

Signatures of the Committee
Chairperson: _____

Member: _____

Member: _____

Member: _____

Approval/Disapproval
Signature: _____ Date: 4/9/08
Director, Doctoral Program

Approval/Disapproval
Signature: _____ Date: 4/10/08
Dean, Graduate School of Nursing, USUHS

Uniformed Services University of the Health Sciences
Graduate School of Nursing

Certification of Dissertation (Form I)

Name of Student: Captain Lynn A Slepski

This is to certify that the accompanying copies of the doctoral dissertation of the student named above are completed and correct copies as approved by the Dissertation Advisory Committee.

Title of the dissertation:

Exploring the Emergency Preparedness Competencies of Disaster Healthcare Responders During Hurricanes Katrina and Rita

Signature, Chairperson

Dorraine D. Watts, PhD, RN
Printed Name

Date 4/9/08

Approval/Disapproval

Signature:

Director, Doctoral Program

Date: 4/9/08

Approval/Disapproval

Signature:

Dean, Graduate School of Nursing, USUHS

Date: 4/10/08

Uniformed Services University of the Health Sciences
Graduate School of Nursing

PhD Degree Certification (Form J)

Name of Student: Captain Lynn A Slepski

School: Graduate School of Nursing

Degree Date: 17 May 2008

1. Total Course Units: 91 GPA 4.0
2. Date passed dissertation proposal oral examination: 2-8-07
3. Date passed final dissertation oral defense: 4-9-08
4. Date Dissertation accepted by the GSN: 4-9-08

I certify that the above named student has fulfilled all requirements for the PhD degree.

Dorraine Watts — Dorraine Watts

Signature, Chairperson — Printed Name
Date 4/9/08

Approval/Disapproval
Signature: _____ Date: 4-9-08
Director, Doctoral Program

Approval/Disapproval
Signature: _____ Date: 4/10/08
Dean, Graduate School of Nursing, USUHS

Slepski, Lynn

From: em.ans.0.9df10.5d6a2958@editorialmanager.com on behalf of ANS Editor Peggy L. Chinn **Sent:** Tue 3/25/2008 3:38 PM

To: Slepski, Lynn; latg928@sprynet.com

Cc:

Subject: Your PDF Exploring the Emergency Preparedness of Disaster Healthcare Responders Using the Meleis' Transitions Framework has been built

Attachments:

Mar 25, 2008

Dear Lynn,

The PDF for your submission, Ms. # titled "Exploring the Emergency Preparedness of Disaster Healthcare Responders Using the Meleis' Transitions Framework" has been successfully built. If you have not already approved the PDF file, please do so, as your submission will not proceed until after your approval.

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User name: LynnSlepski
Password: slepski

Thank you for your submission, and do not hesitate to let me know if I can be of further assistance.

Kind Regards,

Peggy L. Chinn, RN, PhD, FAAN
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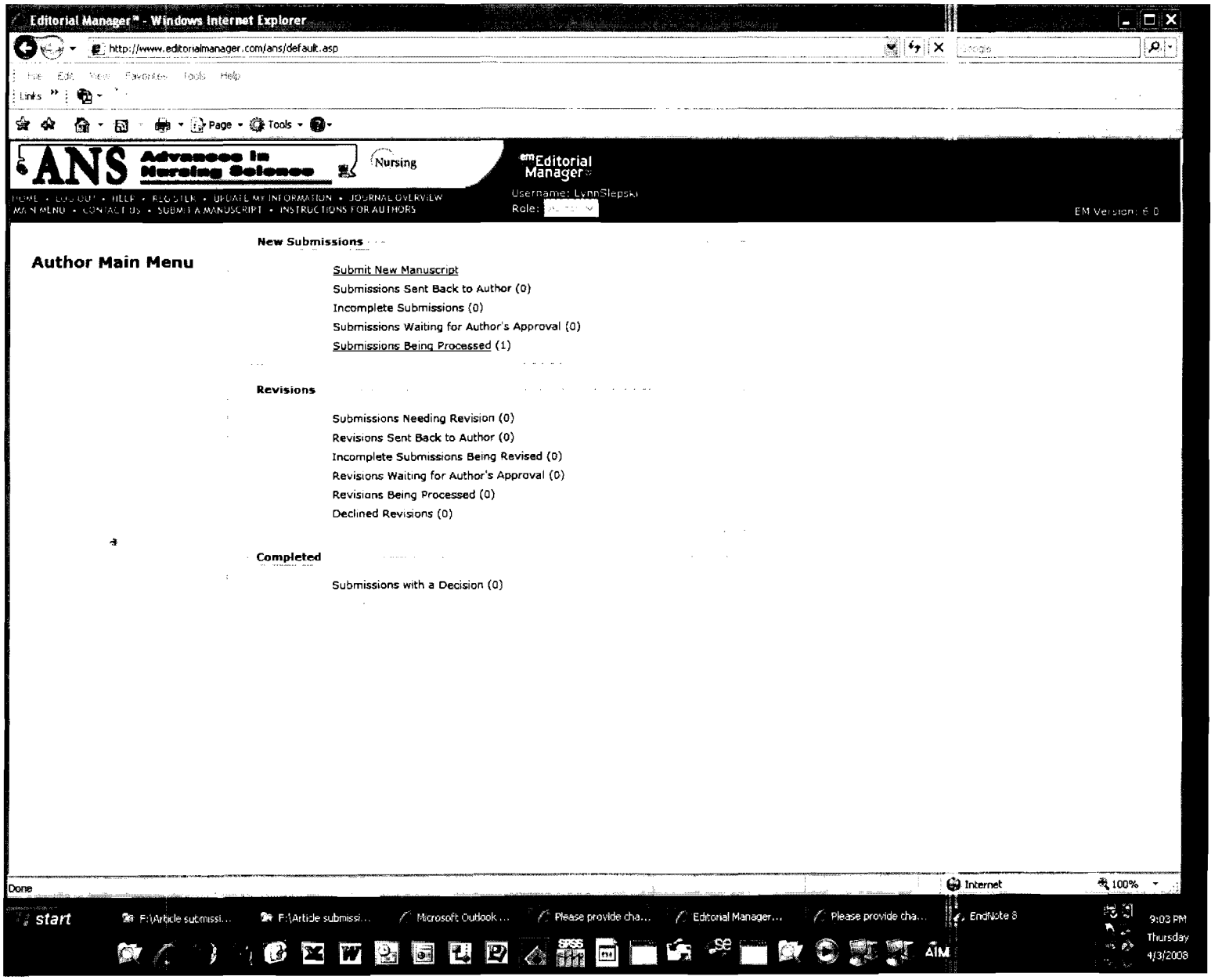
Information for Authors: http://www.ans-info.net/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From: Robert Powers [rpowers@disasternursing.org] **Sent:** Sun 4/6/2008 6:21 PM
To: Slepski, Lynn
Cc:
Subject: PDM submission
Attachments:

Dear Ms. Slepski, we have received your manuscript " Exploring the Emergency Preparedness Competencies of Disaster Healthcare Responders During Hurricanes Katrina and Rita." It is now in the review process, which should take 2-5 weeks to complete. At that time, we will inform you regarding whether or not your manuscript will be accepted for publication in the journal. Feel free to contact me at rpowers@disasternursing.org if you have any questions or concerns.

Thank you for your submission to the Nursing Supplement of *Prehospital and Disaster Medicine* journal.

Robert

Robert Powers

PDM Nursing Supplement Editor

rpowers@disasternursing.org

919-802-8802

Abstract Accepted
Oral Presentation

Sigma Theta Tau
19th International Nursing
Research Congress
Focusing on Evidence-
Based Practice

Deadline Reached

The deadlines for paper submissions and modifications for this program have been reached.
View Submission (no changes allowed.)

Paper #39999

19th International Nursing Research Congress Focusing on Evidence-Based Practice

Emergency Preparedness and Professional Competency among Healthcare Providers during Hurricanes Katrina and Rita

Lynn A. Slepski, MSN
Graduate School of Nursing, Uniformed Services University of the Health Sciences, Washington, DC, USA

Background: No systematic examination of the preparedness of healthcare providers and response capabilities during a large scale disaster has been conducted. As a result, very little is known about what knowledge, skills and abilities, or professional competencies are needed—information critical for designing effective training content. The objective of this IRB-approved study was to examine the issue of emergency preparedness and professional competencies in actual disaster responders.

Methods: In fall 2007 an invitation to participate was sent out through professional and responder organizations to MDs and RNs over the age of 18 who responded to Hurricane Katrina or Rita in Alabama, Louisiana or Mississippi. Participants were asked to complete an anonymous 544-item web-based questionnaire designed to elicit information on their perceptions of the knowledge, skills, and abilities required during their response.

Preliminary Results: Of the 196 respondents, (31% - MDs, 69% - RNs) 76% provided direct patient care. Despite the fact that 78% deployed as part of an organized group (25% USPHS) the response transition was difficult as prior to leaving only 43% knew what role they would perform; what professional items to take (38%); how to protect themselves (27%); or what their decision-making authorities were (37%). Only 40% had someone available to answer questions or demonstrate something they did not know or felt uncomfortable doing despite 81% identifying having someone available as important/very important.

Conclusion: Responders often end up performing roles/tasks for which they are not prepared. Further study is needed on how to better prepare individuals to respond.

Abstract ID#: 39999
Password: 399256
First Author's E-mail Address: Lynn.Slepski@dhs.gov
Program Selection: Research Sessions – Oral Paper & Posters
Topic Selection: Nursing Workforce Competencies
Research: Completed Work/Project
Presentation Format: Podium
Learner Objective #1: The learner will be able to Identify common characteristics of disaster responders
Learner Objective #2: The learner will be able to Identify three competencies needed for disaster response

Keywords: competency, disaster response, emergency preparedness

First Author

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Education: RN Concord Hospital School of Nursing, Concord NH Nursing 1976 BSN Vermont College of Norwich University, Montpelier, VT Nursing 1985 MSN University of Texas Health Science Center, San Antonio, TX Nursing 1988 PhD-c Uniformed Services University of the Health Sciences in progress May 2007
Experience: Over twenty years of personal disaster response experience, to include leading the team that responded to the US Capitol's Anthrax attack and established the first-ever Point of Distribution. Author,nationally recognized subject matter expert and frequently requested speaker on the topics of emergency preparedness and disaster response. Several published book chapters, distance learning modules and peer reviewed articles on the topics.

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17 March 2008

Congratulations, Lynn A. Slepski, MSN! The abstract you submitted for 19th International Nursing Research Congress Focusing on Evidence-Based Practice, "Emergency Preparedness and Professional Competency among Healthcare Providers during Hurricanes Katrina and Rita", has been selected for an oral presentation. The abstracts submitted were exceptional! The presentations selected are an excellent reflection of current nursing research and timely issues. We look forward to your participation in this prestigious event. The opportunity to collaborate with nursing scholars from around the world involved in the advancement of nursing science promises to be rewarding and stimulating.

PRESENTATION SCHEDULED

- Date: Monday, July 7, 2008
- Session Title: Nursing Workforce Competencies
- Session Time: 1:15 PM to 2:30 PM
- There will be a total of three presentations scheduled during the session and your total presentation time is 15 minutes with an additional 5 for questions from the audience.
- To view the time of your individual presentation, click here and find your session title. Click on the time and your individual presentation will be listed.

VIEW YOUR ABSTRACT

- Go to: http://stti.confex.com/stti/congrs08/index.html
- Type your ID#: 39999
- Type your password: 399256
  Because it is past the deadline, changes cannot be made to your abstract.

IMPORTANT DEADLINES – MARK YOUR CALENDAR

31 March 2008– the first author is required to complete an online participant response form for each presentation

- Click on http://stti.confex.com/stti/extra.cgi
- Enter ID# and password
- Select “Paper” in the "entry type" field
  Note: If you are the first author/organizer on more than one presentation, you will need to complete a form for each presentation.

18 June 2008 – PowerPoint Presentation Deadline

- All PowerPoint presentations must be sent to us no later than **Wednesday, 18 June 2008.**
- Presenters not meeting this deadline may be removed from the final program.
- **PowerPoint presentations must be uploaded via our online abstract submission system. Please go**

to: http://stti.confex.com/stti/extra.cgi and enter your ID and password above.
Note: CHANGES CANNOT BE MADE TO POWERPOINTS, ONCE THEY ARE SENT. ADDITIONALLY, CHANGES CANNOT BE MADE ONSITE.

30 April 2008 – Early Registration Deadline

- All presenters are required to register. Presenters must register and submit payment by the early registration deadline to be listed in the final program.
- Registration will be available by the end of next week at http://www.nursingsociety.org/events/congress08

AUDIO VISUAL EQUIPMENT AVAILABLE

- All sessions rooms are equipped with:
  - LCD projector for PowerPoint presentations
  - Lectern microphone
  - Computer with built-in speakers
  - Projection screen
    Note: For smooth transitions between presentations, all PowerPoint presentations must be given on the provided computer and projector.
- Presenters CANNOT use personal equipment or attach personal equipment to the equipment at the convention center.
- Presentations will be **pre-loaded** and linked in order to reduce downtime due to technical problems.
- Windows XP will be the operating system on the computer. PowerPoint 2007 will be the version of software used.

PRESENTATION FROM HANDOUTS

- PowerPoint is not required to present; however, a computer and LCD projector will be the **ONLY** audio-visual equipment available. Overhead and slide projectors will not be available.
- If presenting from handouts, please bring at least **50** copies. The Suntec Singapore International Convention and Exhibition Centre has a business center where handouts can be made for a fee.
- Please let us know by **Wednesday, 18 June 2008** if you will not be using a PowerPoint presentation.

GENERAL INFORMATION

- Specific information for presenter requirements are also available at http://www.nursingsociety.org/events/congress08/Presenter/oral/Pages/SpeakersCorner.aspx
- Additional information regarding the congress, workshops, registration, hotel and travel is available at www.nursingsociety.org/congress.
- Grant opportunities to assist with travel expenses can also be found at this address. These grants are made possible by the Sigma Theta Tau International Foundation for Nursing.

If you have any questions, please contact Machelle Fisher (email:abstracts@stti.org; phone: 888.634.7575 US/Canada or +1.317.634.8171 International).

Thank you,
Anne L. Bateman, EdD, APRN, BC

Chair, 2008 Congress Planning Committee

Barbara G. Robinette, RN, MSN
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Speaker's Corner

This "Speaker's Corner" is the spot where you, as a speaker at 19th International Nursing Research Congress Focusing on Evidence-Based Practice, can upload the material and information we need from you for presentation ID# 39999:

Emergency Preparedness and Professional Competency among Healthcare Providers during Hurricanes Katrina and Rita

as part of Research Sessions – Oral Paper & Posters
Session: Nursing Workforce Competencies
scheduled for Monday, July 7, 2008: 1:15 PM-2:30 PM in Room 305

Please submit the following information about your presentation:

- Confirmation of intent to present no later than Tuesday, April 15
- Permission to Publish Powerpoint Presentation no later than Wednesday, June 18
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- Confirmation of intent to present

○ I (we) agree to attend and present, "Emergency Preparedness and Professional Competency among Healthcare Providers during Hurricanes Katrina and Rita", at the 19th International Nursing Research Congress Focusing on Evidence-Based Practice

☑ I (we) understand that registration is required to be able to present, and that I (we) am (are) responsible for payment of registration, travel, housing and related expenses to attend the meeting.

☑ I (we) understand that in order for my (our) presentation to be listed in the final program, I (we), as the presenter(s), must register and submit payment by the Early Registration Deadline.

☑ I (we) understand that any cancellations must be received by Sigma Theta Tau International in writing. A cancellation fee of US $75 will be assessed prior to the Early Registration Deadline. After that deadline, no refunds will be given for cancellations.

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Lynn A. Slepski

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Globalization of Research through Technology
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7-11 July 2008

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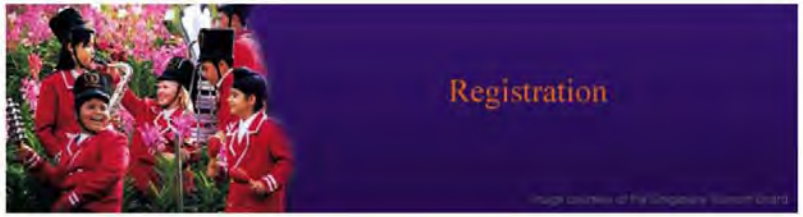
STTI Congress 2008 : Registration

Registration



Registration Information
Registration, Deadlines, Fees, Payment, and Cancellation Policy

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12:01 Monday 3/31/2008

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Schedule of Events

Sunday, 6 July 2008

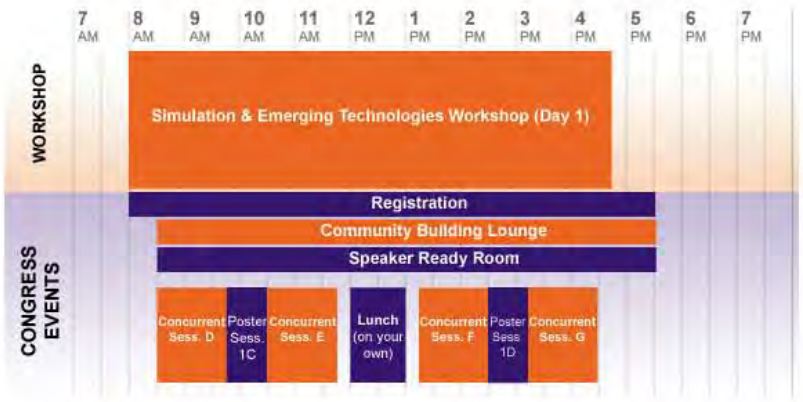
5:00 pm – 7:00 pm	Registration

Monday, 7 July 2008

7:30 am – 7:00 pm	Registration
8:30 am – 9:45 am	Opening Plenary
8:00 am – 4:30 pm	*Conducting an Evidence-Based Practice Project* (presented in collaboration with the Institute for Johns Hopkins Nursing)
8:00 am – 5:00 pm	*Evidence-Based Practice in an eHealth Era* (presented in collaboration with the Registered Nurses' Association of Ontario)

8:30 am – 9:45 am	Community Building Lounge Speaker Ready Room
9:45 am – 10:30 am	Poster Session 1A / Exhibit Viewing
10:30 am – 11:45 am	Concurrent Sessions A
12:00 pm – 1:00 pm	Lunch (on your own)
1:15 pm – 2:30 pm	Concurrent Sessions B
2:30 pm – 3:15 pm	Poster Session 1B / Exhibit Viewing
3:15 pm – 4:30 pm	Concurrent Sessions C
4:45 pm – 5:30 pm	International Induction Ceremony
5:30 pm – 6:30 pm	Welcome Reception / Exhibit Viewing

Tuesday, 8 July 2008



8:00 am – 5:30 pm	Registration
8:00 am – 4:30 pm	Simulation & Emerging Techologies Workshop
8:30 am – 9:45 am	Concurrent Sessions D
8:30 am – 4:30 pm	Community Building Lounge Speaker Ready Room
9:45 am – 10:30 am	Poster Session 1C / Exhibit Viewing
10:30 am – 11:45 am	Concurrent Sessions E
12:00 pm – 1:00 pm	Lunch (on your own)
1:15 pm – 2:30 pm	Concurrent Sessions F
2:30 pm – 3:15 pm	Poster Session 1D / Exhibit Viewing
3:15 pm – 4:30 pm	Concurrent Sessions G

Wednesday, 9 July 2008

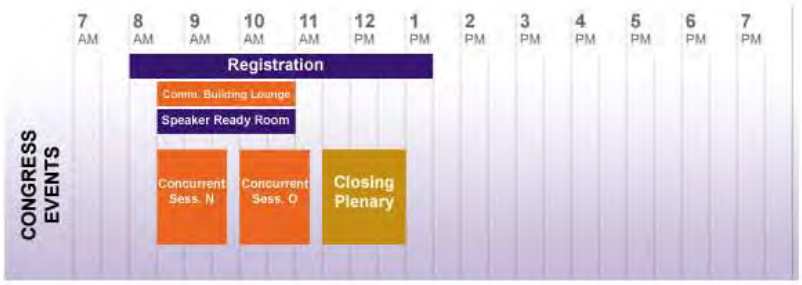
8:00 am – 1:00 pm	Registration
8:00 am – 11:45 am	Simulation & Emerging Technologies Workshop
8:30 am – 9:45 am	Concurrent Sessions H
8:30 am – 12:45 pm	Community Building Lounge Speaker Ready Room
9:45 am – 10:30 am	Poster Session 2A / Exhibit Viewing
10:30 am – 11:45 am	Concurrent Session I
10:30 am – 11:45 am	Free Time/Medical Local Tour opportunities
1:00 pm – 5:00 pm	Simulation & Emerging Technologies Facility Tour
Afternoon	Free Time / Medical & Local Tour Opportunities

Thursday, 10 July 2008

8:00 am – 5:30 pm	Registration
8:00 am – 4:30 pm	*Dreyfus Health Foundation's Problem Solving for Better Health-Nursing* (presented in collaboration with the Dreyfus Health Foundation)
8:00 am – 5:00 pm	*Evidence-Based Practice: Resources for Practice at the Point-of-Care* (presented in collaboration with The Joanna Briggs Institute)
8:30 am – 9:45 am	Concurrent Sessions J
8:30 am – 4:30 pm	Community Building Lounge Speaker Ready Room
9:45 am – 10:30 am	Poster Session 2C / Exhibit Viewing

10:30 am – 11:45 am	Concurrent Sessions K
12:00 pm – 1:00 pm	Lunch (on your own)
1:15 pm – 2:30 pm	Concurrent Sessions L
2:30 pm – 3:15 pm	Poster Session 2D / Exhibit Viewing
3:15 pm – 4:30 pm	Concurrent Sessions M

Friday, 11 July 2008



8:00 am – 1:30 pm	Registration
8:30 am – 9:45 am	Concurrent Sessions N
8:30 am – 11:00 am	Community Building Lounge Speaker Preparation Room
10:00 am – 11:15 am	Concurrent Sessions O
11:30 am – 1:00 pm	Closing Plenary

Abstract Accepted
Poster Presentation

2008 US Public Health Service Scientific and Training Symposium ‘Public Health Strategies for the New Millennium’

2008 USPHS Scientific & Training Symposium ***'Public Health Strategies for the New Millennium'***
June 9-12, Tucson, Arizona

Submitted by: CAPT Lynn Slepski

Address:
Risk Management and Analysis
Department of Homeland Security
National Protection and Programs Directorate
Washington, DC 20528
Phone#: (202) 282-9697
Fax#: (202) 447-3511
Email: Lynn.Slepski@dhs.gov

Poster Presentation

Title: Emergency Preparedness and Professional Competency Among Health Care Providers During Hurricanes Katrina and Rita

Author(s): CAPT Lynn Slepski

Abstract:

Background: No systematic examination of the preparedness of healthcare providers and response capabilities during a large scale disaster has been conducted. As a result, very little is known about what knowledge, skills and abilities, or professional competencies are needed—information critical for designing effective training content. The objective of this IRB-approved study was to examine the issue of emergency preparedness and professional competencies in actual disaster responders.

Methods: In fall 2007 an invitation to participate was sent out through professional and responder organizations to MDs and RNs over the age of 18 who responded to Hurricane Katrina or Rita in Alabama, Louisiana or Mississippi. Participants were asked to complete an anonymous 544-item web-based questionnaire designed to elicit information on their perceptions of the knowledge, skills, and abilities required during their response.

Preliminary Results: Of the 196 respondents, (31% - MDs, 69% - RNs) 76% provided direct patient care. Despite the fact that 78% deployed as part of an organized group (25% USPHS) the response transition was difficult as prior to leaving only 43% knew what role they would perform; what professional items to take (38%); how to protect themselves (27%); or what their decision-making authorities were (37%). Only 40% had someone available to answer questions or demonstrate something they did not know or felt uncomfortable doing despite 81% identifying having someone available as important/very important.

Conclusion: Responders often end up performing roles/tasks for which they are not prepared. Further study is needed on how to better prepare individuals to respond.

You replied on 3/16/2008 6:22 PM.

Slepski, Lynn

From: Tim O'Neill [timo@leading-edge.us] **Sent:** Wed 3/5/2008 4:31 PM
To: 'Info'
Cc:
Subject: Poster Submission Accepted for 2008 USPHS Symposium
Attachments:

Congratulations! Your submission to participate in the **Poster Session** at the **2008 USPHS Scientific and Training Symposium** has been approved. The poster boards (first come, first serve) will be available at **8 am on Monday June 9 at the Tucson Convention Center** for you to put up your display. All posters must be up by **noon on Monday**. You will have one side of a 4' (height) x 8' (width) poster board. You must bring pins to attach your poster. Electricity will not be available.

You must be registered for the Symposium in order to present. Single, multi-day and full registrations are now available online. Please select the discounted speaker rate in the drop-down box. Visit http://www.phscofevents.org/registration.cfm to register. All presenters must be registered by **May 1, 2008** or your presentation will be removed from the program. Visit, http://www.phscofevents.org/location/location.cfm to book a hotel room for the Symposium.

If you are unable to attend, please contact us as soon as possible so that we may update our records. Please contact us at info@phscofevents.org

with any questions.

USPHS Scientific and Training Symposium

2008

Public Health Strategies for the New Millennium

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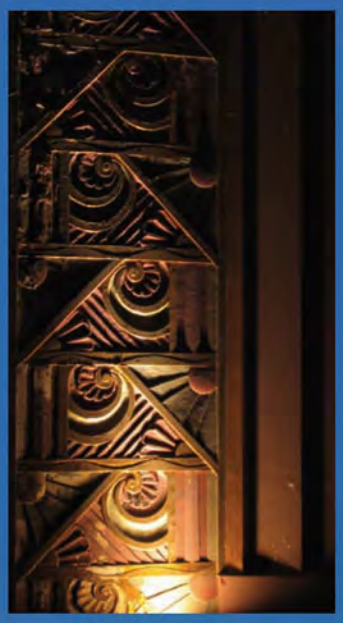
Agenda Highlights



Join us from June 9-12 for the 2008 USPHS Scientific & Training Symposium: Public Health Strategies for the New Millennium at the Tucson (AZ) Convention Center.

The 2008 Symposium will include 3 1/2 jam-packed days of general and tracked sessions focusing on effective strategies for addressing a broad-range of public health challenges including prevention, preparedness, cross-border issues, tribal health care, and much more. The Symposium will help you stay current on emerging preparedness challenges, such as pandemic flu, while also taking you back to basics with prevention and care strategies for fundamental public health concerns like infections.

Continuing education credits will be available. Half- and full-day pre-conference sessions will provide in-depth training in critical skill sets, leadership and more. The Symposium will feature multiple networking opportunities and an exhibit hall with more than 100 vendors demonstrating the latest public health products and services.

June 9-12, 2008

Keynote Presentations

Monday June 9

The Symposium kicks off at 1 pm with the **Opening Ceremonies** followed by a **panel discussion featuring the current Acting Director of the Indian Health Service and all living former directors.** This talented and experienced group of leaders will explore current and emerging challenges facing the agency and the populations it serves and will examine how the agency's history has paved the way for addressing these challenges. The panel also will explore the connection between the agency's work and evolving global health practices.

The formal program for Monday will conclude with the **Luther Terry Lecture** delivered by **CAPT Patricia Mail, MD, MPH, USPHS (Ret)** recent Past President of the American Public Health Association. Dr. Mail's talk is entitled **"New Public Health - Or Return to the Basics?"**

Join us Monday evening for the opening **Meet and Greet** reception followed by the annual **USPHS Ensemble Concert.**

Tuesday June 10

Attendees will meet in profession-specific sessions (see p. 4 for details).

Wednesday June 11

Wednesday will open with a very timely panel exploring the practical implications of the recently-released **National Response Framework (NRF),** which guides response efforts to man-made and natural disasters at all levels of government. The session will open with an overview of the NRF by a representative from FEMA followed by a panel discussion featuring tribal, state and local agency representatives discussing the implications of the plan. The panel will be moderated by **RADM W. Craig Vanderwagen, Assistant Secretary for Preparedness and Response with DHHS.**

Thursday June 12

CAPT Scott Dowell, MD, MPH, USPHS, who is with the Global Disease Detection and Emergency Response Section, Coordinating Office of Global Health at CDC, will deliver the opening keynote on Thursday. CAPT Dowell will examine the potential roles of U.S. public health personnel in **responding to and mitigating emerging global disease threats.**

RADM Steven Galson, MD, MPH, USPHS, Acting U.S. Surgeon General will deliver the closing keynote.

Track Presentations

The majority of Wednesday and Thursday will consist of 30- to 60-minute presentations organized into four concurrent tracks. Below are anticipated highlights for each track.

Track 1:

Strategies for Improving Health Care Access in the US:

- Reforming Health Care in the U.S.: An overview of the range of proposals being offered to provide universal access to care.
- Improving Access to Quality Chronic Care
- Seeing Behavioral Health as the Access Linchpin
- Promoting Medicare Preventive Services
- Increasing Access to a Quit Tobacco Service
- Proposing Health Care Reform in California: A Case Study

Track 2:

Strategies for Addressing the Growing International Element of Public Health

- Shaping Health Care in Iraq
- Working with Torture Victims and Battered Women in Immigrant Populations
- Addressing Transborder Public Health Issues Including Building an Observatory for Health
- Preparing for Clinical Work in Less Developed Countries
- Preparing for Avian Influenza
- Implementing a "Cooperative Strategy for 21st Century Sea Power," an Approach to Creating a Unified Maritime Plan for the U.S. Navy, U.S. Marine Corps, and U.S. Coast Guard to Address Key Tasks, Including Humanitarian Assistance and Disaster Response.

Track 3:

Innovative Prevention and Treatment Strategies in Federally Funded Health Programs

- Improving the Quality of Rural Health Care
- Implementing an HIV Chronic Care Model: A Case Study
- Preventing Adolescent Diabetes
- Enhancing Women's Health and Wellness
- Improving the Public Health Response to Domestic Violence

Track 4:

Strategies for Improving Public Health Emergency Preparedness and Response

- Identifying Steps that Community Leaders and Stakeholders Can Implement to Develop Improved Disaster Preparedness Planning Processes
- Strengthening Tribal Emergency and Public Health Preparedness
- Understanding the Public Health Role in Mass Fatality Management
- Providing Obstetrics Care During Disasters and Evacuations
- Expanding Roles for Health Care Providers in Emergency Response

Related Events

- Surgeon General's 5K Run/Walk and APFT being held at the crack of dawn on Wednesday June 11
- A one-day Retirement Seminar on Friday, June 13
- Immunization training for pharmacists on Friday, June 13
- An Associate Recruiter Session on Friday, June 13
- A Transformation update on Monday morning June 11
- Advance Burn Life Support for nurses
- Basic Life support
- And much more!

Category Day (Profession-Specific Meetings)

On Tuesday June 10 attendees will meet by profession to examine profession-specific topics. Below are highlights of these 11 full-day meetings.

Dentists

- Best practices in infection control and an overview of needs assessment tools
- Health literacy concepts for dentists
- Role of bisphosphonates

Dietitians

- Food safety and defense: Foodborne illness investigations and recalls
- Implications of public health concepts targeting prevention of overweight and obesity in youth
- Role of transfats

Engineers

- Taking PHS engineer public health expertise global
- Advances in improving water quality and safety
- Engineering outreach to improve public health

Environmental Health

- Environmental public health implications of climate change in Rural Alaska
- Past, present and future of environmental health officers in the U.S. Public Health Service
- Environmental health role in injury prevention

Health Services

- Developments in telemedicine
- Cultural competency in disaster mental health situations
- Internet safety

Nurses

- Just in time leadership
- Nursing-led public health interventions in a global environment
- Nurses leading the fight against diabetes and obesity

Pharmacists

- The pharmaceutical industry's responsibility to patients in the developing world
- Telepharmacy update
- Pharmacist's initiatives in ambulatory care practice

Closing Dinner

Category Day (Profession-Specific Meetings), *con't.*

The Symposium will conclude with a separately-priced Southwestern-themed dinner at the Convention Center on Thursday evening. Tickets are available online at www.phscofevents.org

Physicians

- Bio-psycho-social issues related to an aging population
- Immigration health issues
- Environmental medicine

Scientists

- Visitor injury in national parks:
  A partnership in prevention
- Building epidemiologic capacity in Kentucky:
  A model of federal, state, local and private agency collaboration
- Compliance with international health regulations

Therapists

- Role of wellness centers
- Pain management strategies
- Diabetes and exercise

Veterinarians

- Update on AVMA One Health initiative
- Multi-agency and multi-disciplinary response to Rocky Mountain Spotted Fever in Arizona
- Expansion Workforce Act and meeting the need for public health veterinarians

Pre-Conference Sessions

For the first time this year, half- and full-day pre-conference workshops will be offered the day before the U.S. Public Health Service Scientific & Training Symposium to provide attendees with intensive, hands-on training in critical need areas. The trainings will be held at the Tucson Convention Center and The Hotel Arizona on **Sunday June 8**. These workshops are separately priced. Visit www.phscolevents.org for additional details or to register.

The workshops are:

Fundamentals of Leadership

(FULL-DAY)

This session is applicable for public health personnel at all levels who are seeking to hone their leadership skills. Participants will learn the elements of leadership; discover more about their personal leadership style; participate in real-world (including crisis response) scenarios with peers; and leave with a paradigm for successfully improving leadership skills after the course.

CDC Environmental Health Training in Emergency Response (Condensed Version): Food Safety, Potable Water and Shelters Modules

(FULL-DAY)

This invaluable training will benefit federal, tribal, state, and local environmental health practitioners involved in disaster response to potable water, food safety and shelter issues. The training will provide environmental health responders with an introduction to their roles in disaster response related to these issues.

Lean Six Sigma for Healthcare Professionals: A Top Down Approach

(FULL-DAY)

Lean Six sigma is one of today's leading techniques to maximize efficiency and maintain control over each step in the managerial process for healthcare systems. This workshop will help you significantly reduce complexity and achieve major cost reductions to advance your organization to new and higher levels of performance – one tool at a time. Also, you will learn the basics of Lean Six Sigma and receive guidelines to align the right people and resources within your organization to the right projects to get the maximum results.

CDC-Developed Rapid Health Epidemiologic Assessment (CASPER) Toolkit

(HALF-DAY)

This targeted training will benefit APHT members, RDF members, OFRD Tier 3 members, IRCT members, and state-local-non-governmental health or emergency management officials. The course is appropriate for health scientists or administrators with interests in decision-making methods, quantitative methods, IT-supported scientific methods, epidemiology/ surveillance, preventive medicine planning, and health infrastructure or services planning or mitigation. Participants will learn to establish a baseline method for conducting community assessments and improving technical knowledge in applied public health preparedness and response for natural or manmade disasters.

Who Should Attend

Pre-Conference Sessions

Establishing Cultural Competency in Emergency Preparedness and Response

(HALF-DAY)

This hands-on workshop will be useful to anyone who may be called on to participate in an emergency response effort. This interactive workshop will provide participants with a situational awareness of 'what it means to be culturally competent'

utilizing core principles in cultural competency to increase the effectiveness of response and recovery efforts while decreasing the risk for adverse effects, distress and disorders.

Meeting the Ethical Challenges of Hospital-Based Pandemic Influenza Preparedness and Response

(HALF-DAY)

In an influenza pandemic, the demand for health care services is anticipated to exceed the capacity of health care institutions both to treat influenza patients and to sustain other health care services. Institutions will be stressed by personnel shortages that result from workers becoming ill or staying home to care for family or out of fear of infection. Health care institutions may need to isolate infected patients and may need to institute quarantine for potentially exposed patients and staff. With resources scarce, heightened risk imposed on health care workers, and the pressing need to contain the spread of a pandemic virus, health care leaders and professionals will be faced with extraordinary ethical challenges centered on

responsibilities, rationing, and restrictions. With a variety of tools and through a series of activities, this workshop will address ethical challenges in pandemic influenza planning and response including tough decisions that may need to be made about reporting for duty, mandatory vaccination of health care workers, quarantine, and triage and rationing of scarce resources, as well as steps that can be taken to ensure that decision-making is transparent and informed by stakeholder concerns and values.

- Active duty commissioned officers of the U.S. Public Health Service
- Retired commissioned officers
- Inactive reservists
- Civilian public health officials from federal, tribal, state and local government agencies
- Health officials and providers from other uniformed services
- Members of the Medical Reserve Corps
- Other crisis response personnel
- Employees of non-profit public health groups
- Academicians
- Students

General Information

To Register

Single, multi-day and full registrations are available. Included in the full rate are the following meals: Monday Meet and Greet reception and breakfast (continental) and lunch on Tuesday, Wednesday and Thursday. Register by April 21 to receive the Early Bird discount. Registration is available online only at www.phscofevents.org/registration.cfm

Students

Students involved in a full-time, related course of study may attend sessions at no charge (meals not included).
You may register as a student at
www.phscofevents.org/registration.cfm

Exhibit Hall

More than 100 companies, government agencies, nonprofit groups and other organizations will demonstrate the latest public health tools, services and strategies in the Exhibit Hall, which will be open on Wednesday June 11 and Thursday June 12.

Hotels

The Commissioned Officers Foundation has reserved rooms at three downtown hotels for Symposium attendees at the prevailing government per diem rate.
Visit www.phscofevents.org/location/location.cfm for more information or to book a room.

Scholarships

Qualified applicants may be approved to receive a Junior Officer/Civil Servant Scholarship to attend the 2008 U.S.P.H.S. Scientific and Training Symposium.

The scholarship will cover the full registration cost of the Symposium, but does not cover the registration fee for any Pre-conference Events or related Symposium costs such as travel, housing, etc.

To qualify, an individual:

- Must be in a pay grade of O3 or below (Ensign, LTJG, LT) or the civil service equivalent GS 10/11 or below;
- Must be a member (officer)/associate member (civil servant) in good standing of the Commissioned Officers Association; and
- Must certify in writing that funding has been requested from his/her agency and been denied.

After attending the meeting, scholarship recipients will be encouraged to submit a brief, 2-3 paragraph summary of their attendance at the Symposium to the COF Executive Director.

Visit www.phscofevents.org for more information or to apply.

Continuing Education Credits

The Indian Health Service Clinical Support Center is the primary accrediting body for the 2008 U.S. Public Health Service Scientific and Training Symposium. Below is a summary of continuing education credits that are expected to be available for the Symposium. Details had not yet been finalized at press time. For up-to-date information, please visit, www.phscofevents.org.

The Indian Health Service Clinical Support Center is accredited as a sponsor of professional continuing education by the following organizations:

- The IHS Clinical Support Center is accredited by the Accreditation Council for Continuing Medical Education to sponsor continuing medical education for physicians.
- The IHS Clinical Support Center is accredited as a provider of continuing nursing education by the American Nurses Credentialing Center's Commission on Accreditation.
- The IHS Clinical Support Center is approved by the Accreditation Council for Pharmacy Education as a provider of continuing pharmacy education.
- The IHS Division of Oral Health (DOH) sponsors Continuing Dental Education for dentist, hygienists, and dental assistants. The DOH grants continuing education through the American Dental Association Continuing Education Recognition Program (ADA CERP) for dentists. Continuing education credit for dental assistants is provided by the Dental Assisting National Board (DNAB).
- The Indian Health Service, Nutrition and Dietetics Training Program (N&DTP) is a Continuing Professional Education (CPE) Accredited Provider with the Commission on Dietetic Registration (CDR). IHS N&DTP approves CPE credits for IHS sponsored programs for Registered Dietitians and Dietetic Technicians-Registered.
- The Indian Health Service Environmental Health Support Center is an authorized provider of CEU credit of the International Association for Continuing Education and Training (IACET) for many other professional groups.

In addition to the above-listed continuing education credits, which will be issued by the Indian Health Service, applications have been submitted for the American Association of Veterinary State Boards, the National Association of Social Workers, American Psychological Association credits and the American Board of Industrial Hygiene.

Any conference attendee also can apply for general education credits for sessions and hours attended, which can be submitted to the appropriate body (e.g.: licensing or certification agency) for a discipline not covered by other Symposium accrediting bodies. This general education credit certificate will be issued by the Commissioned Officers Foundation.

USPHS Scientific & Training Symposium
c/o Leading Edge
650 Ritchie Highway, Suite 305
Severna Park, MD 21146

USPHS Scientific and Training Symposium 2008

Public Health Strategies for the New Millennium

USPHS Scientific and Training Symposium 2008

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Invited Presentations

Karen A. Rieder Nursing Research Session

Federal Nursing Session

The Association of Military Surgeons of the United States'
114th Annual Meeting

Slepski, Lynn

From: Cippel, Maureen (HHS/OS) [Maureen.Cippel@hhs.gov]
Sent: Friday, March 14, 2008 3:00 PM
To: PSC Slepski, Lynn
Cc: Murray, Ernestine (AHRQ); Hieber, Lysa; Merced-Galindez, Florentino (SAMHSA/CSAP)
Subject: AMSUS

Good afternoon CAPT Slepski,

The USPHS AMSUS Nursing Planning Committee has been informed that you are interested in presenting at the Annual 2008 AMSUS Conference in San Antonio. I am not certain if anyone else has approached you, but we felt that you would make an excellent representative for the USPHS. The TriService Nursing Research Program (TSRNP) would be an ideal presentation platform and occurs on the afternoon of the category day. I do need the following information to forward to the TSRNP for consideration: your CV and the topic of interest.

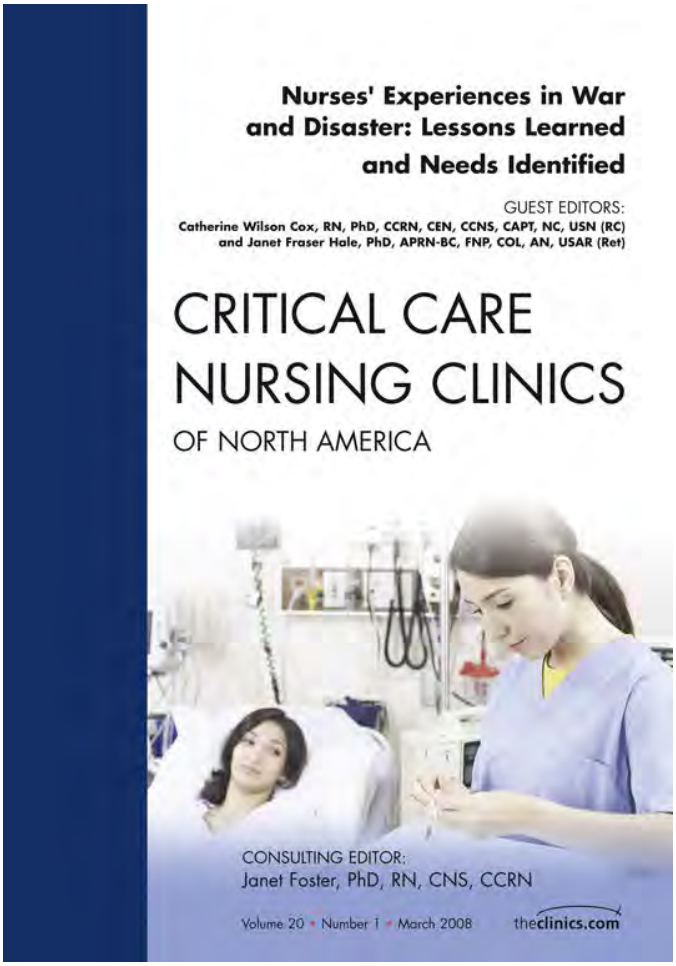
In addition, we would appreciate you considering presenting on not only the category day, but the service day.

If you have any questions, feel free to contact me. I will be out of the office next week and will return any inquiries at that time. If you need assistance sooner, you may contact CAPT Tina Murray.

Thank you,

Maureen

CDR Maureen Cippel MBA, BSN, CPHQ, CCHP
Senior Program Analyst
Program Evaluation and Oversight Division
Office of Commissioned Corps Force Management
Office of Public Health and Science
Office of the Secretary
Tel: 240-453-6090
Fax: 240-453-6109



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Crit Care Nurs Clin N Am 20 (2008) 103–109

CRITICAL CARE
NURSING CLINICS
OF NORTH AMERICA

Directions for Disaster Nursing Education in the United States

Marguerite T. Littleton-Kearney, PhD, RN, FAAN[a,b,*], Lynn A. Slepski, MSN, RN, CCNS, USPHS[c]

[a]*Department of Acute and Chronic Care, Johns Hopkins School of Nursing, Baltimore, MD, USA*
[b]*Department of Anesthesia/Critical Care Medicine, Johns Hopkins School of Medicine, Baltimore, MD, USA*
[c]*U.S. Public Health Service, Risk Management and Analysis Department of Homeland Security, Washington, DC, USA*

The potential for a high-impact incident resulting in mass casualties remains a specter plaguing the health care system. The increasing frequency of natural disasters and world-wide terrorist events has emphasized the need for adequate preparation of health care providers in the event that such an incident occurs. Nurses comprise a large percentage of the health care workforce, so that adequate educational preparation for nurses is essential. Yet recent studies [1,2] indicate that nurses remain unprepared to adequately respond to a high-impact event.

Immediately after the attacks on the World Trade Center in New York and the anthrax exposures in the eastern United States, there was an explosion of courses focused on the elements of chemical, biological, radiological, and nuclear terrorism, collectively known as weapons of mass destruction. Emerging infections (eg, severe acute respiratory syndrome [SARS]), the threat of pandemic viral influenza (eg, Avian influenza), and the frequent occurrence of natural disasters, however, have emphasized the fact that these events may result in an influx of the sick or injured equaling or exceeding the number associated with weapons of mass destruction. Consequently, many educational programs for health care professionals now use the all-hazards approach. Education for nurses, built on the all-hazards approach, provides the framework for college nursing program curricula, and for continuing education (CE) and just-in-time instruction.

Educational demand

Before 2001, few nurses received any formal education in the areas of emergency preparedness or disaster response. Nurses who did possess some rudimentary knowledge likely served in the military, worked as prehospital providers, were employed in a hospital emergency department, or participated in humanitarian disaster relief work. Consequently, most nurses graduating from schools before 2001 have wide gaps in their knowledge of disaster care.

It is accepted that any event resulting in mass illness or injury will exceed the number of health care workers able to supply care. Nurses comprise the largest number of health care workers, but many nurses are unprepared to respond because of lack of knowledge or skills. These existing deficits create a nursing workforce requiring additional hours of formal instruction to be able to respond effectively in the event of a high-impact incident resulting in mass casualties. It is accepted that all practicing nurses should possess a basic understanding and skill set to be able to provide care in the event of a mass casualty event [3]. These educational demands are staggering, particularly in a health care environment already

* Corresponding author. Johns Hopkins University School of Nursing, 625 North Wolfe Street, Baltimore, MD 21205, USA.
E-mail address: mkearne2@son.jhmi.edu (M.T. Littleton-Kearney).

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operating at or above capacity. Innovative ways to educate nurses and other health professionals are being instituted. At least three national CE courses targeting physicians, dentists, paramedics, and nurses were created and are now offered nationally under the sponsorship of the American Medical Association [4]. Patterned on the basic and advanced life support course model, these courses and have three levels: core disaster life support (CDLS), basic disaster life support (BDLS) and advanced disaster life support (ADLS). These programs, however, may be unavailable in more rural locations. Additionally, they can be costly, and many nurses cannot get paid time off work to attend the courses.

Computer-based training, a strategy used in many fields of study, is another newer alternative for practicing nurses to augment their disaster training. On-line training has been purported to be more efficacious, more convenient and more flexible, because it can be completed at the learner's own time and pace [5]. These electronic resources typically include on-line, learn at one's own pace modules [5], and many are offered free of charge. Upon completion of many of these computer modules, the learner can print a certificate to show proof of training. A basic review of nurses' responsibilities during disasters is sponsored jointly by the American Red Cross and Sigma Theta Tau International, but this on-line course provides very basic information and should be considered a starting point for further more in-depth education (http://www.nursingsociety.org/education/case_studies/cases/SP0004.htmlwww.nursingsociety.org). The Centers for Disease Control and Prevention (CDC) offer excellent information on chemical, biological, and radiological emergencies, and the information can be accessed easily from the CDC Web site. Two nursing groups, the International Nursing Coalition for Mass Casualty Education (INCMCE; as of spring 2007 changed to Nursing Emergency Preparedness Education Coalition, NEPEC) and the National Nurse Emergency Preparedness Initiative (NNEPI), are excellent sources of computer links for many of these Web-based training modules relevant for nurses.

Although numerous computer-based training modules for health professionals exist, most of these on-line educational offerings do not specifically target nurses. With funding from the Agency for Healthcare and Quality (AHRQ), Elizabeth Weiner was one of the first individuals to spearhead the development of six disaster education modules specific for nurses [5]. All the modules were developed and centered on the core competencies for practicing nurses identified by INCMCE/NEPEC. Access to these free modules is obtained at the INCMCE Web site (www.incmce.org). Another recent computer-based initiative specifically for nurses is under construction by NNEPI (www.nnepi.org) and funded by the US Department of Homeland Security. Similar to the INCMCE/NEPEC modules, the NNEPI on-line program consists of six modules taking about 6 hours to complete. These free modules are nearing completion, and it is anticipated that they will be available on-line in the near future. Another innovative CE program of study can be accessed on-line at St. Louis University (http://nursing.slu.edu/cne_disaster_prep_home.html). Completion of this nurse-focused CE program provides a certificate in disaster preparedness. Nurses desiring to obtain a certificate are required to pay a fee and must complete six required and four elective modules (from a list of 12). Many other on-line disaster training programs not specifically targeted to nurses are widely available, and both NEPEC and NNEPI have links to the Web sites.

Although the need to educate nurses in the fundamentals of disaster care is recognized, and great strides have been made, nursing school curriculum in the United States for the most part remains inadequate [6]. Weiner and colleagues [6] showed that as late as 2003, the number of hours focused on the nurse's role in disaster preparedness in American schools of nursing had increased marginally, but continued to be inadequate. They identified several important obstacles for this including: curricula already heavily content laden, lack of scholarly articles targeted for nurses, inadequately defined and validated fundamental content, and faculty insufficiently prepared to teach the content [5]. Nevertheless, some university-based schools of nursing are attempting to integrate disaster nursing content throughout the curriculum, often as part of community health course content, or as electives for students to choose [7–9]. For example, the Long Island University School of Nursing involves senior nursing students in a 3-hour lecture covering basic disaster management principles and a 1-day symposium as part of their community health experience [10]. Another school, the Texas Tech University Health Sciences Center School of Nursing, had nursing students participate in a simulated mass causality drill to allow students an opportunity to practice skills [11]. The question remains, however, how much and

what type of content is sufficient? Jennings-Sanders and colleagues [9] suggest that short lectures do not provide enough time to synthesize disaster nursing principles. Consequently, they propose that disaster nursing should be a required semester-long course for undergraduate nursing students. This may be very difficult to achieve, because most undergraduate curricula are content-overloaded.

Efforts to expand and formalize essential disaster-related content have been hampered by the fact that no consensus exists concerning fundamental elements, how the content is taught best, or how to promote retention of an overwhelming amount of information. To date, some anecdotal evidence exists to support the efficacy of bioterrorism and disaster preparedness courses [8,10], but a systematic analysis of relevant curricular threads has yet to be completed. This emphasizes that core content for nursing curriculum needs to continue to be delineated and that outcome competencies must be identified and then validated through research. Creation of such a framework then can guide curriculum organization and design. One of the major impediments in the establishment of such a framework is the fact that essential content for disaster nursing education remains poorly characterized; however, preliminary work on competencies is well underway.

Competencies

The fundamental content of emergency preparedness curricula remains controversial. When considering emergency preparedness training in the hospital setting for example, Rubin questioned not only the quantity of training, but also the usefulness and realistic nature of existing competencies. Although both the American Nurses Association [12] and the American Association of Colleges of Nursing [13] recommend appropriate basic education and continued education for all nurses in emergency preparedness, neither define content.

So, what is meant by competencies? Core competencies are defined as the knowledge, skills, abilities, and behaviors needed to carry out a job [14]. Articulated by measurable statements, competencies are based on key essential job functions, frequently used job functions and accountabilities, and high-risk job functions and accountabilities that involve actions that could cause harm, death or legal actions to customers, employees, or the organization. Whitcomb [15] emphasized that core competencies delineate the knowledge, skills, and attitudes that learners must acquire to be able to perform within each competency domain at a predetermined level. Attaining competencies helps to ensure that programs achieve certain outcomes.

Several authors suggest the development of formal emergency preparedness educational core competencies [16–18] with competency-based objective evaluation [19]. A second group suggests that emergency preparedness training should be required CE [20–22] or a requisite for medical privileges or licensure [23]. The Joint Commission on the Accreditation of Healthcare Organizations (JCAHO) requires measurement of competency in its accreditation process [24]. In January 2001, JCAHO introduced new emergency management standards, building on its long-standing disaster preparedness requirements [24]. One specific phase of the new standard includes determination of the priorities for, and means for effectively deploying, the finite resources needed to support response systems, including trained personnel.

In the absence of standardized federal criteria, several groups have attempted independently to develop core competencies for various responder types without any attempts to harmonize them. Those addressing health care include emergency medical technicians, emergency physicians and emergency nurses [25], emergency response clinicians [26], hospital workers [27], and public health workers [27]. Those specifically addressing nursing include the Columbia School of Nursing [27] (public health and hospital nurses), the Association of Teachers of Preventive Medicine (2003), (clinicians–nurses and physicians) [26], and INCMCE/NEPEC (general nurses) [28]. Unfortunately, the vision and resulting competency requirements are inconsistent across the groups. Further, no attempt has been made to validate if these competencies are accurate or address the full spectrum of required skill sets—information that is essential for planning and future training.

According to the White House-commissioned Katrina Report [29], the required knowledge, skills, and abilities of health care professionals differed from existing competency lists. The White House report stated:

> "Immediate public health and medical support challenges included the identification, triage, and treatment of acutely sick and injured patients; the management of chronic medical conditions in large number of evacuees with special health care needs; the assessment, communication and mitigation of public health risks; mortuary support;

and the provision of assistance to state and local health officials to quickly reestablish health care deliver systems and public health infrastructures.''

Recently the National Organization of Nurse Practitioner Faculties recognized that curricula development for advanced practice nurses (APN) is difficult, as most educators are unfamiliar with emergency preparedness content [30,31], and curricula are already full. As a result, the group has taken a different approach, identifying key emergency preparedness content that can be incorporated into existing courses and providing resources to assist faculty in delivering the content. The white paper should be published soon and will be widely available.

Educational content

Because disasters are intrinsically unpredictable, complete preparedness for disasters, particularly in the case of a bioterrorism event, is likely not fully attainable [32]. Consequently, the dynamic nature of preparedness makes precise identification of basic educational priorities specific for nurses difficult at best. Nevertheless, since 2001, progress has been made. Existing literature reflects five general elements important for nurses, and several authors suggest that these should be incorporated into curricula [8,33,34]. These educational priorities include: detection and reporting of unusual outbreaks, treatment of ill and injured, control measure implementation, resources and preparedness planning, and management of the public. Interestingly, a landmark study of Wisconsin nurses identified at least eight similar educational priorities for nurses dealing with disasters and other large health care emergencies [1]. Unsurprisingly, the top three priorities dealt with nurses' knowledge of: 1) triage and first aid, 2) detection of symptoms associated with biological agent-caused diseases, and 3) accessing critical resources such as the strategic national stockpile. Other areas where nurses felt undereducated were the incident command system, quarantine, decontamination, psychological first aid, epidemiology, clinical decision-making, and communications/connectivity [1].

To date, three models for disaster nursing have been described. The Jennings-Saunders disaster management model highlights four phases that nurses in the community may use to plan disaster nursing care [35]. Each phase focuses on different aspects of disaster planning and response. While the phase 1 (predisaster) targets planning for disaster and resource allocation, phase 2 (disaster) addresses nurses' role in the midst of a disaster. Phases 3 and 4 of the model deal with health need evaluation and effects of the disaster on patient or population health, respectively [35]. In Veenema's early ground-breaking text, the author uses the typical disaster model phases of preimpact, impact, and postimpact to describe model nursing roles specific for each phase of the disaster [36]. Most recently, Wynd proposed a model for disaster military nursing [37], incorporating elements of both the Jennings and the Veenema models [35,36]. Wynd's model, like Veenema's, focuses on military nursing activities involving preparedness and readiness (phase 1); on impact/response and implementation (phase 2); and finally on postimpact recovery, reconstruction, and re-evaluation (phase 3).

These examples illustrate the progress thus far that nurses and nurse educators have made in the identification of components of core knowledge and practice models necessary for optimal function in the event of large-scale health emergencies. Ground-breaking work already had been accomplished, as evidenced by the publication of the core competencies for public health workers and by INCMCE/NEPEC [3,38]. The next steps will be to design a suggested curriculum for university and continuing education that is widely available and endorsed by all the major nursing accreditation bodies as requisite knowledge for nurses responding to emergencies caused by natural disasters, infectious illness, or terrorism.

New directions in disaster nursing

Effective response to disasters and other large-scale health emergency requires strong leadership, strategic planning, and interprofessional collaboration. Several schools of nursing recognize the need for graduate education and to that end have created masters degree programs and post-masters certificates in emergency planning and disaster response [39]. The University of Rochester (New York) was the first school of nursing to create a masters program to educate nurses as leaders in disaster response and emergency preparedness [39]. The program focuses on the development of skills leaders need to design, implement, and evaluate programs dealing with emergency response and disaster management. Another trendsetter was the Johns Hopkins

Table 1
Masters degree nursing programs focused on disaster preparedness/disaster response in the United States (in alphabetical order)

University	Program title	Credits for degree completion
Adelphi University School of Nursing, Garden City, N.Y.	Emergency Nursing and Disaster Management	39 credits[a]
Columbia University School of Nursing, New York	Emergency Preparedness Response	45–49 credits masters plus nine credits as emergency preparedness subspecialty
Johns Hopkins University School of Nursing, Baltimore,	Health Systems Management: Emergency Preparedness/Disaster Response	39 credits[a]
University of Pittsburgh School of Nursing, Pittsburgh	ACNP: Trauma and Emergency Preparedness	44–46 credits for ACNP including subspecialty disaster preparedness courses
University of Rochester School of Nursing, Rochester, N.Y.	Leadership in Health Care Systems in Disaster Response and Emergency Preparedness	30 credits
University of Tennessee College of Nursing, Knoxville, Tenn.	Homeland Security Nursing	37 credits (CNS)[a] 56 credits (NP)[a]
Vanderbilt University School of Nursing, Nashville, Tenn.	Health Systems Management	39 credits, plus six credits elective concentration

Abbreviations: ACNP, acute care nurse practitioner; CNS, clinical nurse specialist.
[a] Post-masters certificate option.

School of Nursing (JHUSON, Baltimore), which in fall 2005 inaugurated what is believed to be the first nursing graduate program geared toward the preparation of nurse leaders in emergency response and disaster management in health care facilities. The masters track was established on the belief that nurses always have held key positions in health care facilities, that they possess valuable insider knowledge of how health care facilities function during disasters, and that they hold pivotal roles in the formulation of institutional disaster management plans. Students are required to complete courses on health systems management, education, national/international humanitarian relief, emergency planning, and disaster response (a series of three). A 12 credit post-masters certificate is also available. Concurrent to the initiation of the JHUSON masters program, the University of Tennessee at Knoxville also launched a nursing masters degree and post-masters certificate option in homeland security nursing. Students may opt to focus their studies on management or on advanced practice/clinical nurse specialist roles. The post-masters option requires completion of 24 credits. Adelphi University (Garden City, Long Island, N. Y.) recently started a masters/post-masters degree in emergency nursing and disaster management. Other university schools of nursing offer masters track subspecialty options or post-masters certificates, including Columbia University and University of Pittsburg (Table 1). As more university schools of nursing expand their masters options to include specialty tracks in emergency response and disaster preparedness, it is likely that graduates will assume groundbreaking new roles as health care leaders, emergency planners, biopreparedness coordinators, and educators.

Summary

Educating nurses to meet the challenge of dealing with patients from large-scale health emergencies such as natural disasters, infectious disease outbreaks, and chemical, biological, and radiological terrorism always will be difficult based on the unpredictable nature of such events. Content development is complicated further, because few researched-based studies validating the efficacy and retention of emergency preparedness training/education are published. Consequently, much of the work in this area is accessible only through preliminary (and often unpublished) reports at conferences and therefore unavailable for use by nursing faculty, policy makers, decision makers, and researchers.

Fundamental to a comprehensive and effective national training plan for nurses and other health care professionals is consensus about the operational definitions of emergency preparedness. Heightened understanding of all the components of emergency preparedness education ensures that the range of preincident actions and processes are: standardized and consistent with mutually agreed upon doctrine and measurable, resulting in integrated emergency preparedness education. Additionally, there should be training exercises incorporating nationally formulated core competencies across all responder/receiver roles. Once this preliminary work is completed, more attention needs to be devoted to rigorous scientific evaluation of the effectiveness of existing emergency preparedness education programs. In addition, systems of metrics to detail capacity and performance must be created. These have significant implications for the future development of educational programs in this area. Although it is virtually impossible to completely prepare every nurse to respond to all types of large-scale health crises, it is possible to identify comprehensive emergency preparedness principles that can provide a framework for university curriculum, CE programs, and just-in-time training, thus creating a nursing workforce better equipped to respond when disasters do strike.

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DISASTER NURSING and EMERGENCY PREPAREDNESS

for Chemical, Biological, and Radiological Terrorism and Other Hazards

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Leadership and Coordination in Disaster Health Care Systems: The Federal Disaster Response Network

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In the early stages of a large-scale incident, the question usually becomes "so when will the cavalry arrive?"

CHAPTER OVERVIEW

This chapter explores health care systems frameworks for disaster response. Included is a brief review of the key components of the Emergency Medical Services System (EMS); a detailed overview of the National Response Plan (NRP), the National Incident Management System (NIMS), and Federal Medical Shelters (FMS); and a description of the National Disaster Medical System (NDMS). Discussion addresses the NRP's purpose, scope, and 15 emergency support functions (ESFs), highlighting the importance of ESF 8 Public Health and Medical Services in providing supplemental assistance to state and local governments in identifying and meeting the public health and medical needs of victims and communities. The chapter reviews the medical response actions particular to the plan and names the responsible agency. The chapter provides federal definitions of disaster conditions, the basic underlying assumptions of the NRP, and provides links to the most current information.

Disaster response, including national plans, must be routinely updated to incorporate new presidential directives and legislative changes and to reflect ongoing plan improvements and enhanced response capabilities, especially as a result of "lessons learned." Because of the ever-changing nature of disaster response, published documents soon become outdated. Nurses need to know where they can obtain the most up-to-date information. Guidance to online resources on disaster response and emergency preparedness are provided.

This chapter explores the issues and challenges related to defining the role of nurses in a disaster situation. Disaster nursing leadership mandates that nurses have a sound knowledge base in critical management areas, as well as in health policy and public health. The chapter presents suggestions for educational needs, research initiatives to further the science of disaster nursing, and political advocacy issues. Nurses must capitalize on

opportunities for leadership during disasters and other periods of crisis.

The reader should note that writing a chapter on federal health and medical response at this point in history is difficult because of the current transitional nature of these systems, as evidenced by the following factors:

(1) Lessons learned from Hurricanes Katrina and Rita.
(2) Continuing realignment of resources to better meet the needs of the nation.
(3) Current modifications to the NRP that include the refinement of NIMS.
(4) Continuing work to clarify and to preplan the national response to such issues as the 15 threat scenarios, which are expected to encompass the most likely responses, as well as pandemic influenza.

INTRODUCTION

In order to actively participate in the country's plan for emergency preparedness for disasters and other mass casualty incidents (MCIs), nurses must be aware of the existing framework for disaster response. The role of nurses may include identifying the event; functioning as a first responder to the scene; working with a rapid needs assessment team; providing direct care by working in a local hospital, FMS, public health department, or field medical team; managing communications and the media; or assuming a leadership position in the coordination of all of these types of activities. Each of these roles might include planning, policy writing, or research. Knowledge of the disaster life cycle and knowledge of the organization of local, state, and federal response plans is critical for nurses to function successfully during these types of events. Leadership roles for nurses in disaster management require a unique knowledge base and skills set. Finally, because of the anticipated restructuring of NIMS and factors such as alterations in the federal systems for public health and medical response and accommodations for additional national security concerns, nurses need to view some of the information in this chapter as "a moving target" subject to change with a high degree of certainty. To understand how these changes will alter the leadership structure and coordination of efforts of the major disaster health systems, nurses are advised to seek updated information on the Internet Web sites listed at the end of the chapter.

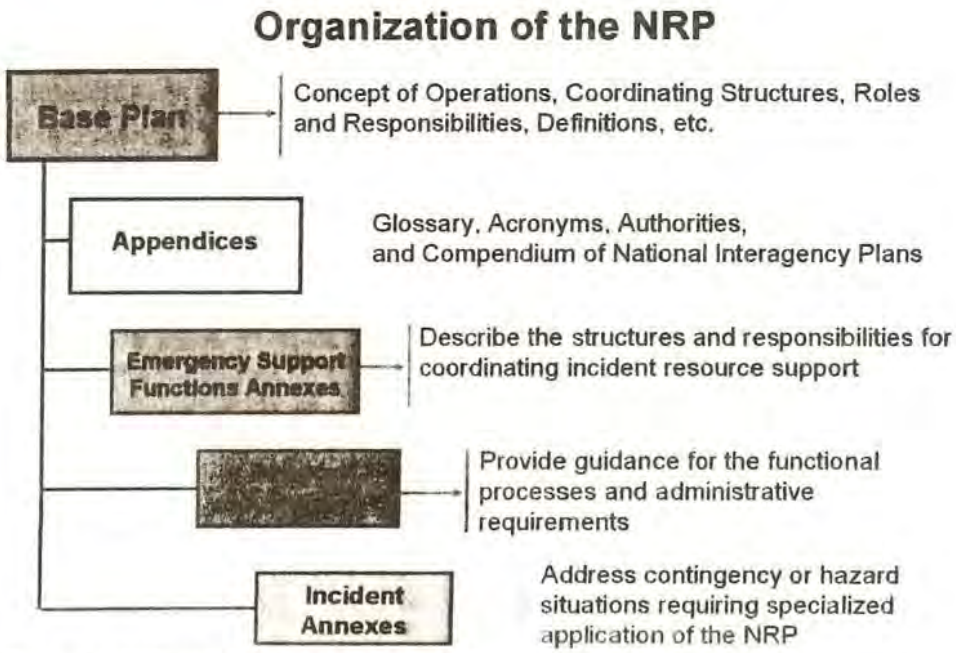

Figure 2.1 National Response Plan structure.
Department of Homeland Security (2006b) Quick Reference Guide, p. 2.

EMERGENCY MEDICAL SERVICES RESPONSE

The Emergency Medical Services (EMS) system is a highly organized sector of the health care system that has a significant impact on the health of the public both through routine crisis management functions and their contribution during disasters. EMS systems are frequently responsible for coordinating the provision of medical care at a mass gathering (Leonard & Moreland, 2001). The EMS system, in general, consists of (a) prehospital systems (fire and rescue services, dispatch, 911, EMTs and paramedics, and ambulance services) and (b) in-hospital systems (emergency departments, poison control, etc.). See chapter 3 "Emergency Medical Services" for further discussion.

NATIONAL RESPONSE PLAN

Local and state responders handle most disasters and emergencies. Occasionally, the actual or potential impact of an event can overwhelm resources available at the local level. When the scope of a disaster exceeds local and state capability to respond, they can call on the federal government to provide supplemental assistance. The U.S. government has a fundamental obligation to provide for the security of the nation and to protect its people, principles, and social, economic, and political structures (Pinkson, 2002). If needed, the federal government can mobilize an array of resources to support state and local efforts. Various emergency teams, support personnel, specialized equipment, operating facilities, assistance programs, and levels of access to private-sector resources constitute the overall federal response system. The NRP describes the major components of the system, as well as the structure for coordinating federal response and recovery actions necessary to address state-identified requirements and priorities.

National Response Plan Implementation

Established by Homeland Security Presidential Directive-5 (HSPD-5), the NRP provides a single, comprehensive, all-hazards approach to the structure and mechanisms of national level policy and operational coordination for domestic incident management. It incorporates prevention, preparedness, response, and recovery (White House, 2003). Proper implementation of the plan results in a coordinated and effective response, regardless of the cause, size, or nature of the event (DHS, 2004b). The plan provides the structure and mechanisms to ensure that all levels of government work together. The base plan includes planning assumptions, roles and responsibilities, concept of operations, and incident management actions.

Under the NRP, the Secretary of the Department of Homeland Security (DHS) serves as the Principal Federal Official for domestic incident management and manages the federal government's response. The Secretary of Homeland Security declares Incidents of National Significance (in consultation with other departments and agencies as appropriate) and provides coordination for federal operations and resources, establishes reporting requirements, and conducts ongoing communications with federal, state, local, tribal, private-sector, and nongovernmental organizations to maintain situational awareness, analyze threats, assess the national implications of threats, maintain operational response activities, and coordinate threat or incident response activities.

As "all hazards" implies, potential events covered by the NRP include man-made and natural disasters, disruptions to the nation's energy and information technology infrastructure, and terrorist attacks, among others. The NRP is always in effect; however, the implementation of NRP coordination mechanisms is flexible and scalable and is based on the needs of the area where the event is occurring. The plan can be implemented in response to a threat, in anticipation of a significant event, or in response to an event such as an Incident of National Significance. An *Incident of National Significance* is defined as an actual or potential high-impact event that requires robust coordination of the federal response, including federal, state, local, tribal, private-sector, and nongovernmental partners, in order to save lives, minimize damage, and provide the basis for long-term community and economic recovery. Actions range in scope from ongoing monitoring, analysis, and reporting of the event, known as maintaining situational awareness, through the implementation of NRP incident annexes and other supplemental federal contingency plans, to full implementation of all relevant NRP coordination mechanisms.

Although there are no automatic triggers for an Incident of National Significance, the Secretary of Homeland Security considers the four HSPD-5 criteria but also evaluates other factors in determining whether to declare an Incident of National Significance (DHS, 2006a). The four criteria are as follows:

(1) A federal department or agency acting under its own authority has requested the assistance of the Secretary of Homeland Security.
(2) The resources of state and local authorities are overwhelmed and federal assistance has been requested by the appropriate state and local authorities. Examples include:
    - Major disasters or emergencies as defined under the Stafford Act.
    - Catastrophic incidents.

(3) More than one federal department or agency has become substantially involved in responding to an incident. Examples include:
   - Credible threats, indications, or warnings of imminent terrorist attack or acts of terrorism directed domestically against the people, property, environment, or political or legal institutions of the United States or its territories or possessions.
   - Threats or incidents related to high-profile, large-scale events that present high-probability targets such as National Special Security Events (NSSEs) and other special events as determined by the Secretary of Homeland Security, in coordination with other federal departments and agencies.

(4) The Secretary of Homeland Security has been directed to assume responsibility for managing the domestic incident by the President.

The NRP forms the basis of how the federal government coordinates with state, local, and tribal governments and the private sector during incidents. Through standardized protocols, the plan helps to protect the nation from natural and man-made hazards and terrorist attacks, thereby saving lives; protecting public, health, safety, and property; protecting the environment; and reducing negative psychological consequences and disruptions to the American way of life.

The NRP (DHS, 2004b, p. 3) establishes mechanisms to

(1) Maximize the integration of incident-related prevention, preparedness, response, and recovery activities.
(2) Improve coordination and integration of federal, state, local, tribal, regional, private-sector, and nongovernmental organization partners.
(3) Maximize efficient utilization of resources needed for effective incident management and critical infrastructure/key resources protection and restoration.
(4) Improve incident management communications and increase situational awareness across jurisdictions and between the public and private sectors.
(5) Facilitate emergency mutual aid and federal emergency support to state, local, and tribal governments.
(6) Facilitate federal-to-federal interaction and emergency support.
(7) Provide a proactive and integrated federal response to catastrophic events.
(8) Address linkages to other federal incident management and emergency response plans developed for specific types of incidents or hazards.

The NRP lays out the process for a federal response and designates the Secretary of the Department of Homeland Security to coordinate the response efforts and to provide support for the incident command structure. In some cases, federal agencies manage localized incidents with plans under their own authority and not part of the NRP.

Within the NRP, there are 15 emergency support functions (ESF) (Table 2.1). Each ESF is coordinated by a federal agency, except ESF 6, which DHS coordinates with the American Red Cross. The ESFs provide coordination for interagency support from the federal government.

ESF 8 is the public health and medical portion of the NRP and is coordinated by the Department of Health and Human Services (HHS). As required by the NRP, HHS is responsible for the following (DHS, 2004B, p. ESF-iii):

(1) Preincident planning and coordination.
(2) Maintaining ongoing contact with ESF primary and support agencies.
(3) Conducting periodic ESF meetings and conference calls.
(4) Coordinating efforts with corresponding private-sector organizations.
(5) Coordinating ESF activities relating to catastrophic incident planning and critical infrastructure preparedness as appropriate.

In addition, the primary agency serves as the executive agent under the federal coordinating officer. The primary agency is responsible for the following (DHS, 2004b):

(1) Orchestrating federal support within their functional area for an affected state.
(2) Providing staff for the operations functions at fixed and field facilities.
(3) Notifying and requesting assistance for support agencies.
(4) Managing mission assignments and coordinating with support agencies, as well as appropriate state agencies.
(5) Working with appropriate private-sector organizations to maximize use of all available resources.
(6) Supporting and keeping other ESFs and organizational elements informed of ESF operational priorities and activities.
(7) Executing contracts and procuring goods and services as needed.
(8) Ensuring financial property accountability for ESF activities.
(9) Planning for short-term and long-term incident management and recovery operations.
(10) Maintaining trained personnel to support interagency emergency response and support teams.

National Response Plan Emergency Response Functions Descriptions

ESF	ESF COORDINATOR
1—Transportation ■ Federal and civil transportation support ■ Transportation safety ■ Restoration/recovery of transportation infrastructure ■ Movement restrictions ■ Damage and impact assessment	U.S. Department of Transportation
2—Communications ■ Coordination with telecommunications industry ■ Restoration/repair and temporary provisioning of communications infrastructure ■ Protection, restoration, and sustainment of national cyber and information technology resources	U.S. Department of Homeland Security / National Communications System
3—Public Works and Engineering ■ Infrastructure protection and emergency repair ■ Infrastructure restoration ■ Engineering services, construction management ■ Critical infrastructure liaison	U.S. Department of Defense / U.S. Army Corps of Engineers
4—Firefighting ■ Firefighting activities on federal lands ■ Resource support to rural and urban firefighting operations	U.S. Department of Agriculture
5—Emergency Management ■ Coordination of incident management efforts ■ Issuance of mission assignments ■ Resource and human capital ■ Incident action planning ■ Financial management	U.S. Department of Homeland Security / Federal Emergency Management Agency
6—Mass Care, Housing, and Human Services ■ Mass care ■ Disaster housing ■ Human services	U.S. Department of Homeland Security / Federal Emergency Management Agency / American Red Cross
7—Resource Support ■ Resource support (facility space, office equipment & supplies, contracting services, etc.)	U.S. General Services Administration
8—Public Health and Medical Services ■ Public health ■ Medical ■ Mental health services ■ Mortuary services	U.S. Department of Health and Human Services
9—Urban Search and Rescue ■ Life-saving assistance ■ Urban search and rescue	U.S. Department of Homeland Security / Federal Emergency Management Agency

Continued

ESF	ESF COORDINATOR
10—Oil and Hazardous Materials Response ■ Oil and hazardous materials (chemical, biological, radiological, etc.) response ■ Environmental safety and short- and long-term cleanup	U.S. Environmental Protection Agency
11—Agriculture and Natural Resources ■ Nutrition assistance ■ Animal and plant disease / pest response ■ Food safety and security ■ Natural and cultural resources and historic properties protection and restoration	U.S. Department of Agriculture
12—Energy ■ Energy infrastructure assessment, repair, and restoration ■ Energy industry utilities coordination ■ Energy forecast	U.S. Department of Energy
13—Public Safety and Security ■ Facility and resource security ■ Security planning and technical and resource assistance ■ Public safety/security support ■ Support to access, traffic, and crowd control	U.S. Department of Justice
14—Long-Term Community Recovery ■ Social and economic community impact assessment ■ Long-term community recovery assistance to states, local governments, and the private sector ■ Mitigation analysis and program implementation	U.S. Department of Homeland Security / Federal Emergency Management Agency
15—External Affairs ■ Emergency public information and protective action guidance ■ Media and community relations ■ Congressional and international affairs ■ Tribal and insular affairs	U.S. Department of Homeland Security

The National Response Plan as It Relates to the National Incident Management System

The NRP and National Incident Management System (NIMS) work together to improve the nation's incident management capabilities and overall efficiency by ensuring that responders from different jurisdictions and disciplines can work together to respond to natural disasters and emergencies, including acts of terrorism, by following standardized practices and using common terminology (DHS, 2004a).

The NIMS provides a template for incident management regardless of size, scope, or cause. The template includes a core set of concepts, doctrine, principles, procedures, organizational processes, and terminology. It sets standards where possible. Use of the NIMS template enables federal, state, local, and tribal governments, as well as the private sector and nongovernmental organizations to work together effectively and efficiently to prevent, prepare for, respond to, and recover from domestic incidents, regardless of cause, size, or complexity.

NIMS is meant to be used at all levels of a response (Figure 2.2). NIMS standard incident command structures are based on the following three key organizational systems:

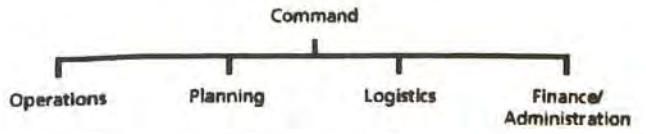

Figure 2.2 NIMS incident command organization: Command staff and general staff.
Department of Homeland Security (2004a). *National Incident Management System*, p. 13.

(a) Incident Command System (ICS)
NIMS establishes ICS as a standard incident management organization with five functional areas—command, operations, planning, logistics, and finance/administration—for management of all major incidents. To ensure further coordination, and during incidents involving multiple jurisdictions or agencies, the principle of unified command has been universally incorporated into NIMS. This unified command not only coordinates the efforts of many jurisdictions but provides for and assures joint decisions on objectives, strategies, plans, priorities, and public communications.

(b) Multiagency Coordination Systems
These define the operating characteristics, interactive management components, and organizational structure of supporting incident management entities engaged at the federal, state, local, tribal, and regional levels through mutual-aid agreements and other assistance arrangements.

(c) Public Information Systems
These refer to processes, procedures, and systems for communicating timely and accurate information to the public during crisis or emergency situations.

By prescribing standard roles, functions, and language, responders know what to expect and how to communicate their needs. Together, the NRP and the NIMS integrate the capabilities and resources of various governmental jurisdictions, incident management and emergency response disciplines, nongovernmental organizations, and the private sector into a cohesive, coordinated, and seamless national framework for domestic incident management. NIMS benefits include a unified approach to incident management, standard command and management structures, and emphasis on preparedness, mutual aid, and resource management. NIMS activities address each phase of the disaster life cycle (see Figure 2.3).

The National Response Plan and a Local Event

Sometimes, when trying to understand a large "system of systems," the best approach is to examine the issue from a specific frame of reference. Listed below is an example of how the NRP might be used in a pandemic.

Figure 2.3 The disaster life cycle describes the process through which emergency managers *prepare* for emergencies and disasters, *respond* to them when they occur, help people and institutions *recover* from them, *mitigate* their effects, *reduce the risk* of loss, and *prevent* disasters such as fires from occurring.
Source: FEMA (2002).

One Example: Use of the NRP With Pandemic Influenza

A pandemic is a global disease outbreak. A flu pandemic occurs when a new influenza virus emerges for which people have little or no immunity and for which there is no vaccine. The disease spreads easily from person to person, causes serious illness, and can sweep across the country and around the world in a very short time. In the United States, pandemic planning assumes that nearly all areas of the country will be affected simultaneously by multiple waves of disease lasting 6–8 weeks. Plans estimate that 40% of the workforce could be out ill, taking care of ill family members, or unwilling to come to work for fear of contracting the disease. Emergency planners recognize that pandemic influenza has the risk of disrupting society and its function, so using a pandemic as an exemplar can help illustrate how the NRP works. The plan addresses federal responses to actual or potential health emergencies or biological incidents, to specifically include pandemic influenza.

For purposes of a national health emergency, such as pandemic influenza, the NRP outlines the broad objectives of the federal government as

- Detecting the event through disease surveillance and environmental monitoring.
- Identifying and protecting the population(s) at risk.
- Determining the source of the outbreak.
- Quickly framing the public health and law enforcement implications.
- Controlling and containing any possible epidemic (including providing guidance to state and local public health authorities).
- Augmenting and surging public health and medical services.
- Tracking and defeating any potential resurgence or additional outbreaks.
- Assessing the extent of residual biological contamination and decontaminating as necessary.

Activation of the National Response Plan

Consistent with NIMS, elements of the NRP can be partially or fully implemented, depending on the specifics and the magnitude of a threat or an event. The following structures and annexes are the primary, but not exclusive, mechanisms that may be implemented during a pandemic.

- *Domestic Readiness Group (DRG):* The Domestic Readiness Group comprises senior leaders from all cabinet-level departments and agencies. The White House will convene the DRG on a regular basis to develop and coordinate implementation of preparedness and response policy and in anticipation of, or during crises, such as pandemic influenza to address issues that cannot be resolved at lower levels and provide strategic policy direction for the federal response.
- *Incident Advisory Council (IAC):* A tailored group of senior federal interagency representatives, the IAC resolves resource support conflicts required for a federal response and provides strategic advice to the Secretary of Homeland Security during an actual potential incident. During a pandemic, the IAC might advise providing critical infrastructure assistance, such as movement of food supplies, or critical components, such as chlorine for a water treatment plant.
- *Joint Field Office (JFO):* A temporary federal facility established locally to provide a central point for federal, state, local, and tribal executives with responsibility for incident oversight, direction, and assistance to coordinate protection, prevention, preparedness, response, and recovery actions. For a pandemic, a national JFO may be established, or, if the pandemic outbreak is isolated to various areas, multiple JFOs may be established locally.
- *Emergency Support Functions (ESFs):* A functional approach that groups the capabilities of federal departments and agencies and the American Red Cross into ESFs to provide the planning, resources, and program implementation that are most likely needed during Incidents of National Significance. Although there are 15 ESFs that can be activated independently or concurrently, key ESFs applicable to a pandemic are as follows:
  - *ESF 5—Emergency Management:* Provides the core management and administrative functions in support of NRP operations. This includes, but is not limited to activating ESFs; alerting, notifying, and deploying DHS emergency response teams; information management; and facilitation of requests for federal assistance. FEMA is the ESF 5 coordinator.
  - *ESF 8—Public Health and Medical Services:* Provides the mechanism for coordinated federal assistance in response to public health and medical care needs for potential or actual Incidents of National Significance or during a developing potential health and medical situation. HHS is the ESF 8 coordinator.
  - *ESF 11—Agriculture and Natural Resources:* Supports efforts to control and eradicate an outbreak of a highly contagious animal disease and assures food safety and security. The U.S. Department of Agriculture is the ESF 11 coordinator.
  - *ESF 13—Public Safety and Security:* Presents a mechanism for coordinating and providing federal noninvestigative/noncriminal law-enforcement, public-safety, and security capabilities and resources during potential or actual Incidents of National Significance. DHS and the Department of Justice are joint ESF 13 Coordinators.
  - *ESF 15—External Affairs:* Ensures that sufficient federal assets are deployed to provide accurate, coordinated, and timely messages to affected audiences, including governments, the media, the private sector, and the affected populace.
- *Incident Annexes:* Address contingency or hazard situations requiring specialized application of the NRP. Incident annexes can be implemented concurrently or independently. Examples of incident annexes with applicability to a pandemic are
  - *Biological Incident Annex:* Describes incident management activities related to a biological terrorism event, pandemic, emerging infectious disease, or novel pathogen outbreak. HHS is the coordinating agency for this annex. The response by HHS and other federal agencies is flexible and adapts as the outbreak evolves.
  - *Catastrophic Incident Annex:* Establishes the context and overarching strategy for implementing and coordinating an accelerated, proactive, national

response to a catastrophic incident with little or no advance warning, where the need for federal assistance is obvious and immediate. This annex may be activated during a pandemic to push preidentified assets, resources for mass care, public health and medical support, and victim transportation to areas expected to be severely impacted. DHS is the coordinating agency for this annex.

- *Support Annexes:* Describe the framework through which common functional processes and administrative requirements necessary to ensure efficient and effective incident management are executed. The actions described in the support annexes are overarching and applicable to nearly every type of incident. Examples of key support annexes that would support a pandemic are
  - *Private Sector Coordination Annex:* Addresses specific federal actions that are required to effectively and efficiently integrate incident management operations with the private sector. This includes, but is not limited to, determining the impact of an incident on a sector and forecasting cascading effects of interdependencies, assisting federal decision makers in determining appropriate recovery measures, and establishing procedures for communications between public and private sectors. DHS is the coordinating agency for this annex.
  - *International Coordination Annex:* Describes activities taken in coordination with international partners for public health messaging, monitoring, and responding to an Incident of National Significance that may transcend U.S. borders. The U.S. Department of State is the coordinating agency for this annex.

ROLES AND RESPONSIBILITIES

Although many agencies and nongovernmental organizations will have responsibilities for assisting in the federal response to a pandemic outbreak, the following entities have primary roles:

Department of Homeland Security

- Retains responsibility for overall domestic incident management.
- Possesses the authority, through the Secretary, to declare an Incident of National Significance and activate the Biological Incident Annex to the NRP.
- Coordinates nonmedical federal response actions for an Incident of National Significance.
- Coordinates with other federal agencies to develop a public communications plan through ESF 15—external affairs and the public affairs annex to the NRP.
- Provides logistics support, as appropriate.
- Identifies transportation needs and arranges for use of U.S. Coast Guard aircraft and other assets in providing urgent airlift and other transportation support through ESF 1.
- Works with HHS to identify and to isolate people and cargo entering in the United States that may be contaminated.
- Develops plans and facilitates coordinated incident response planning with the private sector at the strategic, operational, and tactical levels.

Department of Health and Human Services (HHS)

- Supports the DHS incident management mission by providing the leadership, expertise, and authority to implement critical and specific aspects of the response under the NRP.
- Has primary responsibility for public health and medical emergency planning, preparations and response to a naturally occurring outbreak from an emerging infectious disease and its own authority to declare a public health emergency.
- Coordinates for both ESF 8 and the NRP biological incident annex.
  - Convenes meeting of ESF 8 organizations and provides ESF 8 representatives to appropriate multiagency coordinating structures and teams.
  - Assists with epidemic surveillance and coordination.
  - Notifies and coordinates with international health organizations (e.g., World Health Organization) in coordination with the Department of State.
  - Coordinates requests for medical transportation.
  - Coordinates assembly and delivery of medical equipment and supplies.
  - Requests/informs support agencies of required assistance for vaccine/pharmaceutical allocation and distribution.
  - Evaluates event and makes recommendations for quarantine, shelter-in-place, and so on.
  - Oversees deployment of the Strategic National Stockpile.
  - Activates NDMS, PHS, and other medical response capabilities.

U.S. Department of Agriculture (USDA)

- Supports the DHS incident management mission by leading the effort to control and eradicate an outbreak of a highly contagious or an economically devastating animal disease.
- Coordinates surveillance activities along with ESF 8 in zoonotic diseases.
- Assures food safety and security in coordination with other responsible federal agencies (including

coordinating recall and tracing of adulterated products and disposal of contaminated food products).
- Provides appropriate personnel, equipment, and supplies, coordinated through the Animal and Plant Health Inspection Service Emergency Management Operations Center primarily for coordination of animal issues such as disposal of animal carcasses, protection of livestock health, and zoonotic diseases associated with livestock.

Department of State

- Has sole responsibility for bilateral and multilateral actions on foreign affairs issues related to a federal event or Incident of National Significance.
- Notifies and coordinates with appropriate international health agencies, in conjunction with HHS, and coordinates with DHS and other nations regarding any transportation or border restrictions.
- Acts as the formal diplomatic mechanism for U.S. government requests to other nations for assistance or other nations' requests to the United States.

Department of Defense (DOD): Provides defense support of civil authorities to all ESF and support and incident annexes when requested and approved by the Secretary of Defense. Examples of DOD support include, but are not limited to:

- Providing support for the evacuation of seriously ill or injured patients to locations where hospital care or outpatient services are available.
- Providing available logistical support to health/medical response operations.
- Providing available military medical personnel to assist HHS in the protection of public health.
- Activating and deploying (or preparing to deploy) agency- or ESF-managed teams, equipment caches, and other resources in accordance with the NRP-Catastrophic Incident Supplement.

Other Departments and Agencies: Support public health emergencies according to their outlined roles and responsibilities in ESF and support, and incident annexes.

ESF 8: Public Health and Medical Services

Most important to nurses is ESF 8, or public health and medical services, which provides coordinated federal assistance to communities following a major disaster or emergency or during a developing potential medical situation. HHS is the primary agency for ESF 8. The purpose of ESF 8 is to "provide supplemental assistance to State, local, and tribal governments in identifying and meeting the public health and medical needs of victims of an Incident of National Significance" following a significant natural disaster, man-made event, or Incident of National Significance (DHS, 2004b). The core functions of ESF 8 include:

- Assessment of public health/medical needs (including behavioral health).
- Public health surveillance.
- Medical care personnel.
- Medical equipment and supplies.

Resources will be furnished when state and local resources are overwhelmed and public health or medical assistance is requested from the federal government. ESF 8 involves supplemental assistance to state and local governments in identifying and meeting the public health and medical needs of victims in the following functional areas:

- Assessment of public health/medical needs includes:
  - ☐ Health surveillance
  - ☐ Medical care personnel
  - ☐ Health/medical equipment and supplies
  - ☐ Patient evacuation
  - ☐ Patient care
  - ☐ Safety and security of human drugs, biologics, medical devices, and veterinary drugs
  - ☐ Blood and blood products
  - ☐ Food safety and security
  - ☐ Agriculture safety and security
  - ☐ Worker health/safety
  - ☐ All-hazard public health and medical consultation, technical assistance, and support
  - ☐ Behavioral health care
  - ☐ Public health and medical information
  - ☐ Vector control
- Potable water/wastewater and solid-waste disposal
- Victim identification/mortuary services
- Protection of animal health

A basic concept of the NRP is that responding federal resources will operate in coordination with state, local, and tribal entities. To learn more about roles and responsibilities in ESF 8, refer to http://www.dhs.gov/interweb/assetlibrary/NRP_FullText.pdf for the full reference and a full copy of the NRP (Appendix A).

FEDERAL DEFINITION OF A DISASTER CONDITION

For the purposes of activating the National Response Plan, the federal government defines a disaster condition as follows:

1. A significant natural disaster or man-made event that overwhelms the affected state that would necessitate both federal public health and medical care assistance. Hospitals, nursing homes, ambulatory care centers, pharmacies, and other facilities for medical/health care and special needs populations may be severely structurally damaged or destroyed. Facilities that survive with little or no structural damage may be rendered unusable or only partially usable because of a lack of utilities (power, water, sewer) or because staff are unable to report for duty as a result of personal injuries or damage/disruption of communications and transportation systems. Medical and health care facilities that remain in operation and have the necessary utilities and staff will probably be overwhelmed by the "walking wounded" and seriously injured victims who are transported there in the immediate aftermath of the occurrence. In the face of massive increases in demand and the damage sustained, medical supplies (including pharmaceuticals) and equipment will probably be in short supply. (Most health care facilities usually maintain only a small inventory stock to meet their short-term, normal patient-load needs). Disruptions in local communications and transportation systems could also prevent timely resupply.
2. Uninjured persons who require daily or frequent medications such as insulin, antihypertensive drugs, digitalis, and dialysis may have difficulty in obtaining these medications and treatments because of damage/destruction of normal supply locations and general shortages within the disaster area.
3. In certain other disasters, there could be a noticeable emphasis on relocation; shelters; vector control; and returning water, wastewater, and solid-waste facilities to operation.
4. A major medical and environmental emergency resulting from chemical, biological, or nuclear weapons of mass destruction could produce a large concentration of specialized injuries and problems that could overwhelm the state and local public health and medical care system.

Assumptions of the Plan

For a disaster plan to work, it must be based on a set of valid assumptions. The primary assumptions of the NRP include

1) Resources within the affected disaster area will be inadequate to clear casualties from the scene or treat them in local hospitals. Additional mobilized federal capabilities will be urgently needed to assist state and local governments to triage and treat casualties in the disaster area and then transport them to the closest appropriate hospital or other health care facility. Additionally, medical resupply will be needed throughout the disaster area. In a major disaster, operational necessity may require the further transportation by air of patients to the nearest metropolitan areas with sufficient concentrations of available hospital beds, where patient needs can be matched with the necessary definitive medical care.
2) A terrorist release of weapons of mass destruction; damage to chemical and industrial plants, sewer lines, and water distribution systems; and secondary hazards such as fires will result in toxic environmental and public health hazards to the surviving population and response personnel, including exposure to hazardous chemicals, biological substances, radiological substances, and contaminated water supplies, crops, livestock, and food products.
3) The damage and destruction of a major disaster, which may result in multiple deaths and injuries, will overwhelm the state and local mental health system, producing an urgent need for mental health crisis counseling for disaster victims and response personnel.
4) Assistance in maintaining the continuity of health and medical services will be required.
5) Disruption of sanitation services and facilities, loss of power, and massing of people in shelters may increase the potential for disease and injury.
6) Primary medical treatment facilities may be damaged or inoperable; thus, assessment and emergency restoration to necessary operational levels is a basic requirement to stabilize the medical support system.

Federal Medical Response Resources

A variety of response resources exist across the federal government. Each provides options where nurses can volunteer and make a difference. The following sections briefly discuss some of the major response resources.

National Disaster Medical System

The foundation of ESF 8 is the multiagency National Disaster Medical System (NDMS). Directed by the Department of Health and Human Services, Office of the Assistant Secretary for Preparedness and Response, the NDMS has the following three primary functional elements: medical response, patient evacuation, and hospitalization.

Medical response. NDMS responds to a disaster area with disaster medical assistance teams (DMATs),

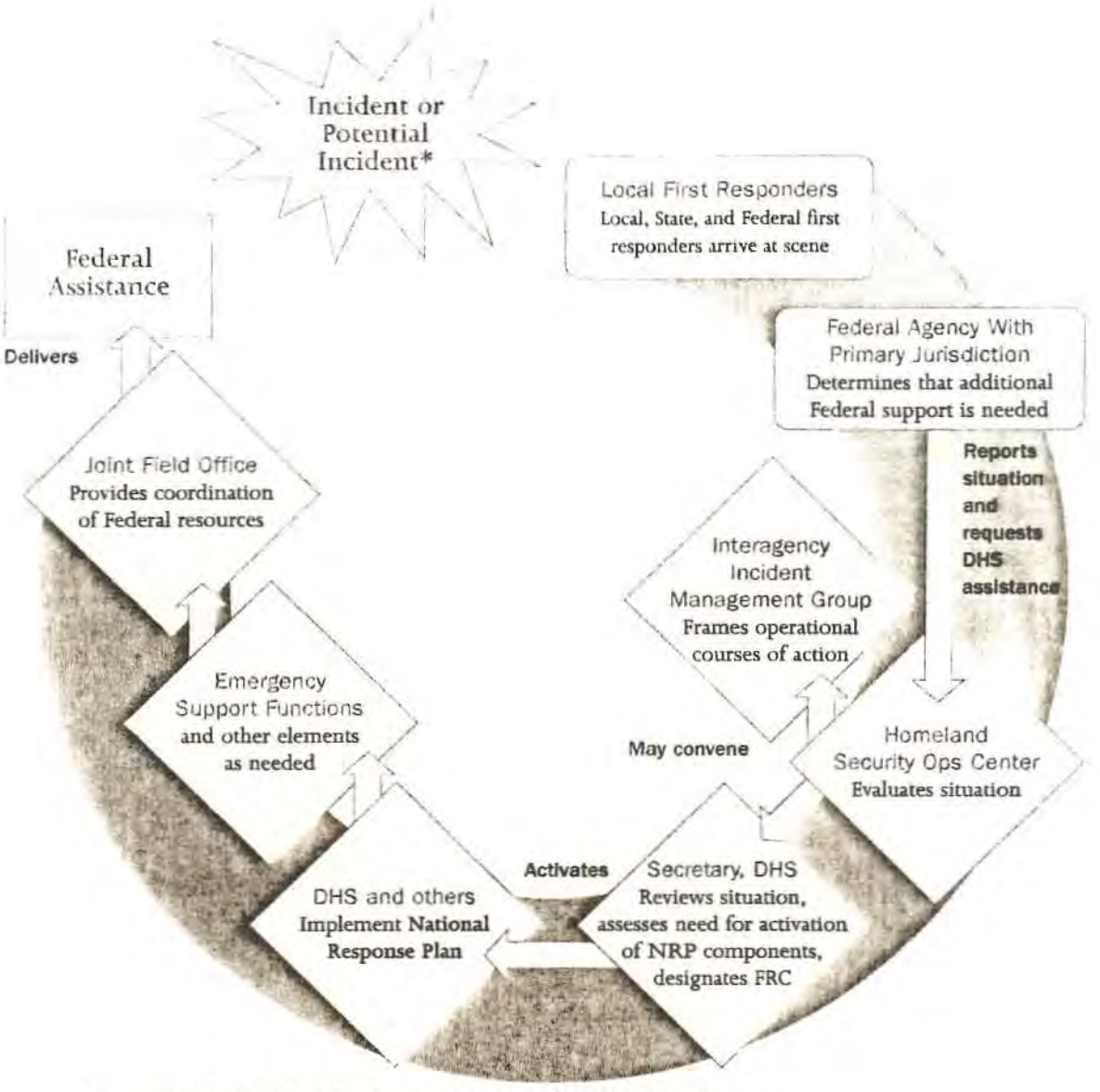

Figure 2.4 Federal to federal support of non-Stafford Act incidents.
Source: NRP (2004). Available at http://www.dhs.gov/interweb/assetlibrary/NRP_FullText.pdf

specialty teams, management support teams, medical supplies, and equipment.

Patient evacuation. Arrangements are coordinated for patients who cannot be cared for locally to be evacuated to designated locations throughout the United States.

Hospitalization. NDMS has created a network of hospitals spanning the major metropolitan areas of the country. All hospitals in this network have agreed to accept patients in the event of a national emergency.

The NDMS is designed to care for victims of any incident that exceeds the capability of the state, regional or federal health care system. Some of the events that may require its activation are earthquakes, floods, hurricanes, industrial disasters, a refugee influx, and military casualties from overseas. Activation of NDMS may be accomplished by a presidential declaration. This authority is granted by the Robert T. Stafford Disaster Relief and Emergency Assistance Act, also referred to as the Stafford Act. When a presidential declaration has not occurred, HHS, under the Public Health Service Act as amended, may request activation of the NDMS. In addition, through the mechanism provided by Emergency Management Assistance Compacts states may request health and medical teams from another state when either their own resources are overwhelmed or they do not have the particular type of resource available in a nearby jurisdiction (Wallace, 2002) (see Figures 2.4 and 2.5).

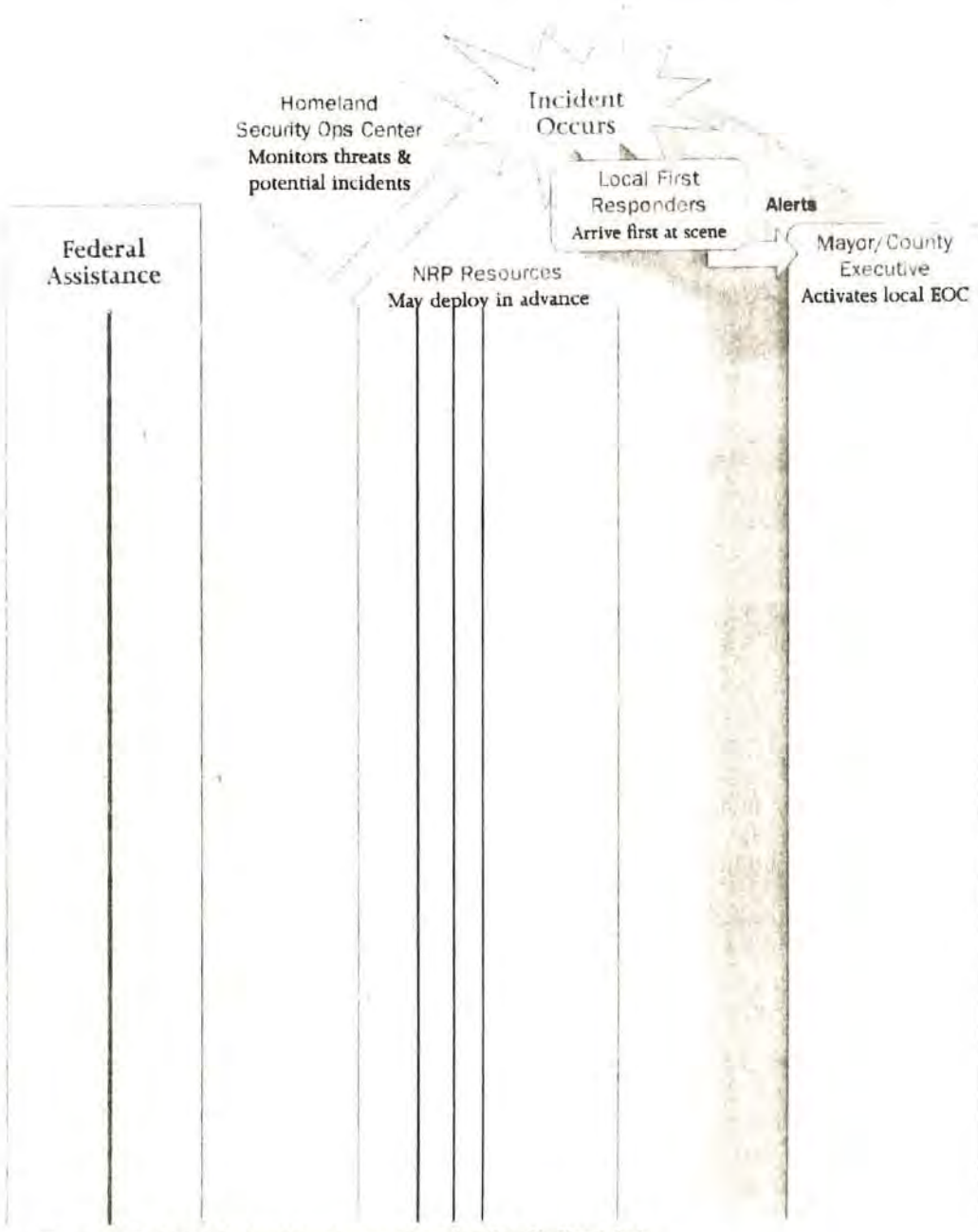

Figure 2.5 Initial federal involvement under the Stafford Act.
Source: NRP (2004). Available at http://www.dhs.gov/interweb/assetlibrary/NRP_FullText.pdf

Disaster Medical Assistance Team

A DMAT is a volunteer group of professional and paraprofessional medical personnel (supported by a cadre of logistical and administrative staff) designed to provide medical care during a disaster or other event. Members are usually from the same state or region of a state. Each team has a sponsoring organization, such as a major medical center; public health or safety agency; or nonprofit, public, or private organization that signs a memorandum of agreement with the HHS. The DMAT sponsor organizes the team and recruits members, arranges training, and coordinates the dispatch of the team. The team composition includes physicians, nurses, nurse practitioners, physician's assistants, pharmacists, pharmacy technicians, nurse's aides, mental health specialists, dentists, environmental and laboratory specialists, and emergency medical technicians. Technical or nonmedical members may consist of engineers; radio operators; administrators; and logistic, security, mechanics, and computer specialists. The nonmedical, technical,

Figure 2.6 National Disaster Response Network.
Source: FEMA (2002).

and logistical support group is as important as the medical group. Without these support personnel, the team cannot function (Wallace, 2002).

Team size will vary according to the mission assignment. Strike teams, a concept developed during the Atlanta 1996 Summer Olympic Games, are five- to six-member squads, usually made up of medical personnel that have the capability to move quickly into an affected area to provide limited medical treatment and assessment. A full team deployment is expected to be 33 to 35 personnel and is made up of medical, technical, and support personnel. The full team is usually the configuration that is used for a large event such as a hurricane or an earthquake (Wallace, 2002; see Figure 2.6).

Highly specialized DMATs that deal with specific medical conditions such as crush injury, burn, and mental health emergencies supplement the standard DMATs. Other teams within the NDMS section include Disaster Mortuary Operational Response Teams (DMORTs) that provide mortuary services, Veterinary Medical Assistance Teams that provide veterinary services, and National Nursing Response Teams (NNRTs) that will be available for situations specifically requiring nurses and not full DMATs. Such a scenario might include assisting with mass chemoprophylaxis (a mass vaccination program) or a scenario that overwhelms the region's supply of nurses in responding to a weapon of mass destruction event. Others teams are the National Pharmacy Response Teams that will be used in situations such as those described for the NNRTs but where pharmacists, not nurses or DMATs, are needed, and the National Medical Response Teams (NMRTs) that are equipped and trained to provide medical care for potentially contaminated victims of weapons of mass destruction.

DMATs deploy to disaster sites with sufficient supplies and equipment to sustain themselves for a period of 72 hours while providing medical care at a fixed or temporary medical care site. In mass casualty incidents, their responsibilities may include triaging patients, providing high-quality medical care despite the adverse and austere environment often found at a disaster site, and preparing patients for evacuation. In other types of situations, DMATs may provide primary medical care and may serve to augment overloaded local health care staffs. Under the rare circumstance that disaster victims are evacuated to a different locale to receive definitive medical care, DMATs may be activated to support patient reception and disposition of patients to hospitals. DMATs are designed to be a rapid-response element to supplement local medical care until other federal or contract resources can be mobilized or the situation is resolved. DMAT members are required to maintain appropriate certifications and licensure within their discipline. When members are activated as federal employees, licensure and certification is recognized by all states. In addition, DMAT members are paid while serving as part-time federal employees and have the protection of the Federal Tort Claims Act in which the federal government becomes the defendant in the event of a malpractice claim. DMATs are principally a community resource available to support local, regional, and state requirements. However, as a national resource they can be federalized.

Training plays one of the most important roles in DMAT development. The primary source of training is distance learning through the World Wide Web. NDMS, at its annual conferences, offers workshops and training courses for members. More information about the NDMS and its training and education programs can be accessed at http://ndms.dhhs.gov/. Individual teams have different amounts of training. Some approaches to field exercises have the teams identify a mass gathering event, such as an air show or an outside concert. Although medical care is the primary focus of training, the logistic and administrative support functions must participate equally to develop their skills.

Medical Reserve Corps

The Medical Reserve Corps (MRC) was launched in July 2002 to organize medical, public health, and other volunteers in support of existing local programs and resources to improve the health and safety of communities and the nation. Ultimately, the goal is to have a nationwide network of community-based units of volunteers that focus on strengthening public health. The MRC focuses on addressing the issues of preidentification, credential verification, training, legal protection, and activation of volunteers at the local level.

The MRC is a specialized component of Citizen Corps, hometown volunteers dedicated to improving and ensuring security where they live. These community-based units locally organize and use volunteers who want to donate their time and expertise to promote healthy living throughout the year and to prepare for and respond to emergencies. Since its inception, the MRC program has blossomed to include over 390 units across the nation and more than 70,000 volunteers. MRC units are not stand-alone entities. Instead, they provide supplemental personnel to support the existing emergency and public health capabilities in the community. MRC volunteers are a community resource during times of need and also for ongoing public health activities. Many MRC units have undertaken activities that support the public health priorities of the U.S. Surgeon General and the objectives of the Healthy People 2010 initiative, such as diabetes detection, hypertension monitoring, cancer screening, influenza vaccination, and other similar programs.

MRC volunteers include medical and public health professionals such as physicians, nurses, pharmacists, dentists, veterinarians, and epidemiologists. Other community members, such as interpreters, chaplains, office workers, and legal advisors, can fill other vital support functions in the units. MRC volunteers supplement existing local emergency and public health resources.

The MRC response to the 2005 hurricanes highlights the broad range of services that MRCs can provide in emergencies. An estimated 6,000 MRC volunteers supported the response and recovery efforts in their local communities in the hardest-hit areas. As the storm forced hundreds of thousands of Americans to flee the affected areas, MRC volunteers were ready and able to help when needed and were there to assist as evacuees were welcomed into their communities. These volunteers spent countless hours helping people whose lives had been upended by these disastrous events by:

- Establishing medical needs shelters to serve medically fragile and other displaced people.
- Staffing and providing medical support in evacuee shelters and clinics.
- Filling in locally at hospitals, clinics, and health departments for others who were deployed to the disaster-affected regions.
- Immunizing responders prior to their deployment to the disaster-affected regions.
- Staffing a variety of response hotlines created after the hurricanes hit.
- Teaching emergency preparedness to community members.
- Recruiting more public health and medical professionals who can be credentialed, trained, and prepared for future disasters that may affect their hometowns or other communities.

In addition to this local MRC activity, over 1,500 MRC members expressed a willingness to deploy outside their local jurisdiction on optional missions to the disaster-affected areas with their state agencies, the American Red Cross, and HHS. Of these, almost 200 volunteers from 25 MRC units were activated by HHS and more than 400 volunteers from over 80 local MRC units were deployed to support American Red Cross disaster operations in areas along the Gulf Coast.

The United States Public Health Service (USPHS)

Led by the U.S. Surgeon General, the mission of the "U.S. Public Health Service (Corps) is protecting, promoting, and advancing the health and safety of the Nation. The Commissioned Corps achieves its mission through rapid and effective response to public health needs, leadership and excellence in public health practices, and the advancement of public health science. As one of the seven Uniformed Services of the United States, the corps is a specialized career system designed to attract, develop, and retain health professionals who may be assigned to Federal, State, or local agencies or international organizations" (USPHS, 2006). To accomplish this mission, the agencies and programs are designed to

- Help provide health care and related services to medically underserved populations—Americans, American Indians, Alaska Natives, and other population groups with special needs.
- Prevent and control disease, identify health hazards in the environment and help correct them, and promote healthy lifestyles for the nation's citizens.
- Improve the nation's mental health.
- Ensure that drugs and medical devices are safe and effective, food is safe and wholesome, cosmetics are harmless, and that electronic products do not expose users to dangerous amounts of radiation.
- Conduct and support biomedical, behavioral, and health services research and communicate research results to health professionals and the public.
- Work with other nations and international agencies on global health problems and their solutions.

Federal Medical Shelters

First used in the aftermath of Hurricanes Katrina and Rita, Federal Medical Shelters (FMS) are 250-bed capacity shelters equipped with equipment supplied, in part, from the Strategic National Stockpile (SNS). Staffed by 150 USPHS, DOD, the Department of Veterans' Affairs, and the National Disaster Medical

System (NDMS) health care and support personnel, these shelters are self-contained facilities designed to quickly augment both inpatient and outpatient treatment facilities. A total of 40 medical shelters will be created, for a total capacity of 10,000 beds. Fixed facilities, such as the National Institutes of Health, supplement existing FMS capabilities by providing a telemedicine consultation and triage facility to serve as a medical specialty service, allowing providers on the ground to tap into the expertise of NIH experts in collaboration with 125 medical centers throughout the country.

Medical Response Actions

Federal health and medical assistance is generally categorized into the major functions of prevention, medical services, mental health services, and environmental health. Each of the 15 specific functional areas is contained in one of these categories. When the lead of the national ESF 8 (the Assistant Secretary for Preparedness and Response) is notified of the occurrence of a potential major disaster or emergency, the Assistant Secretary will request HHS and support agencies to initiate action immediately to identify and report the potential need for federal health and medical support to the affected disaster area in the following functional areas.

Assessment of Health/Medical Needs. Lead HHS Agency: Office of the Assistant Secretary for Preparedness and Response (ASPR)

Action: Mobilize and deploy an assessment team to the disaster area to assist in determining specific health/medical needs and priorities. This function includes the assessment of the health system/facility infrastructure.

Health Surveillance. Lead HHS Agency: Centers for Disease Control and Prevention

Action: Assist in establishing surveillance systems to monitor the general population and special high-risk population segments; carry out field studies and investigations; monitor injury and disease patterns and potential disease outbreaks; and provide technical assistance and consultations on disease and injury prevention and precautions.

Medical Care Personnel. Lead HHS Agency: ASPR

Action: Provide federal medical response assets and individual public health and medical personnel to assist in providing care for ill or injured victims at the location of a disaster or emergency. DMATs and Federal Medical Shelters can provide triage, medical or surgical stabilization, and continued monitoring and care of patients until they can be evacuated to locations where they will receive definitive medical care. Specialty DMATs can also be deployed to address mass burn injuries, pediatric care requirements, chemical injury, or contamination. In addition to DMATs, active duty, reserve, and National Guard units for casualty clearing/staging and other missions will be deployed as needed. Individual clinical health and medical care specialists may be provided to assist state and local personnel. The VA is one of the primary sources of these specialists.

Health/Medical Equipment and Supplies. Lead HHS Agency: ASPR in coordination with DHS/National Response Coordination Center

Action: Provide health and medical equipment and supplies, including pharmaceuticals, biologic products, and blood and blood products, in support of DMAT operations and for restocking health and medical care facilities in an area affected by a major disaster or emergency.

Patient Evacuation. Lead HHS Agency: ASPR in coordination with DHS/FEMA

Action: Provide for movement of seriously ill or injured patients from the area affected by a major disaster or emergency to locations where definitive medical care is available. NDMS patient movement will primarily be accomplished using fixed-wing aeromedical evacuation resources of DOD; however, other transportation modes may be used as circumstances warrant.

In-Hospital Care. Lead HHS Agency: ASPR

Action: Provide definitive medical care to victims who become seriously ill or injured as a result of a major disaster or emergency. For this purpose, NDMS has established and maintains a nationwide network of voluntarily precommitted, nonfederal, acute care hospital beds in the largest U.S. metropolitan areas.

Food/Drug/Medical Device Safety. Lead HHS Agency: Food and Drug Administration

Action: Ensure the safety and efficacy of regulated foods, drugs, biologic products, and medical devices following a major disaster or emergency. Arrange for seizure, removal, and destruction of contaminated or unsafe products.

Worker Health/Safety. Lead HHS Agency: Centers for Disease Control and Prevention

Action: Assist in monitoring health and well-being of emergency workers, perform field investigations and studies addressing worker health and safety issues, and provide technical assistance and consultation on worker health and safety measures and precautions.

Radiological/Chemical/Biological Hazards Consultation. Lead HHS Agency: Centers for Disease Control and Prevention

Action: Assist in assessing health and medical effects of radiological, chemical, and biological exposures on the general population and on high-risk population groups; conduct field investigations, including collection and analysis of relevant samples; advise on protective actions related to direct human and animal exposure, and on indirect exposure through radiologically, chemically, or biologically contaminated food, drugs, water supply, and other media; and provide technical assistance and consultation on medical treatment and decontamination of radiologically, chemically, or biologically injured/contaminated victims.

Mental Health Care. Lead HHS Agency: Substance Abuse and Mental Health Services Administration

Action: Assist in assessing mental health needs; provide disaster mental health training materials for disaster workers; and provide liaison with assessment, training, and program development activities undertaken by federal, state, and local mental health officials.

Public Health Information. Lead HHS Agency: Centers for Disease Control and Prevention

Action: Assist by providing public health and disease and injury prevention information that can be transmitted to members of the general public who are located in or near areas affected by a major disaster or emergency.

Vector Control. Lead HHS Agency: Centers for Disease Control and Prevention

Action: Assist in assessing the threat of vector-borne diseases following a major disaster or emergency; conduct field investigations, including the collection and laboratory analysis of relevant samples; provide vector control equipment and supplies; provide technical assistance and consultation on protective actions regarding vector-borne diseases; and provide technical assistance and consultation on medical treatment of victims of vector-borne diseases.

Potable Water/Waste Water and Solid Waste Disposal. Lead HHS Agency: Indian Health Service

Action: Assist in assessing potable water and wastewater/solid-waste disposal issues; conduct field investigations, including collection and laboratory analysis of relevant samples; provide water purification and wastewater/solid-waste disposal equipment and supplies; and provide technical assistance and consultation on potable water and wastewater/solid-waste disposal issues.

Victim Identification/Mortuary Services. Lead HHS Agency: ASPR in coordination with DHS/FEMA

Action: Assist in providing victim identification and mortuary services, including DMORTs; temporary morgue facilities; victim identification by fingerprint, forensic dental, and/or forensic pathology/anthropology methods; and processing, preparation, and disposition of remains. Another important function of DMORTs is the provision of family support centers.

Veterinary Services. Lead HHS Agency: ASPR in coordination with DHS/FEMA/NDMS

Action: Assist in delivering health care to injured or abandoned animals and performing veterinary preventive medicine activities following a major disaster or emergency, including conducting field investigations and providing technical assistance and consultation as required.

CHALLENGES TO HEALTH SYSTEMS' LEADERSHIP AND COORDINATION

Increased Risk. America's metropolitan areas continue to grow in size and density, with many of the largest cities situated in coastal regions, along earthquake faults, or in other high-risk areas. Meanwhile, commercial and residential development has progressed at a rapid pace across the nation, expanding into previously unsettled or sparsely settled areas exposing these growing communities to wildfire, flooding, and erosion. The ubiquitous risks associated with acts of terrorism and the dramatic increase in recent natural disasters will continue to pose significant challenges to all those involved with health systems coordination and management as well.

Limited Resources. The downturn in the economy coupled with years of reduced funding for public health infrastructure has imposed severe constraints on many federal agencies and organizations. Working with limited resources means that each organization must make the most of the resources it already has. Many states are experiencing cuts in federal funding for public health programs.

Workforce Management. All federal, state, and local governments and organizations are facing serious challenges in maintaining and growing their workforce. In no place is this more serious than in the disaster management and nursing professions. Programs and curricula must be developed and implemented with the focus on growing disaster and emergency management leaders of the future.

OPPORTUNITIES AND CHALLENGES FOR NURSES IN DISASTER MANAGEMENT

Nursing as a profession has a long history of being creative and visionary in its continuous efforts to meet the needs of patients and their families. Nursing leadership in tumultuous times, such as during the disaster continuum or at a mass casualty incident, will also require significant amounts of the same creativity and vision. When the opportunities and challenges of disaster management in the future are considered, the following questions arise.

Leadership

Who will become the leaders? A leader is anyone who uses interpersonal skills to influence others to accomplish a specific goal (Sullivan & Decker, 2001). Leadership is important in forging links and creating connections among organizations and their members to promote high levels of performance, quality outcomes, and the accomplishment of goals. Nurses need to get into leadership positions in *all types of health care and public health organizations* to assist with the design of disaster response plans and the development of future change in these organizations. In this capacity, nurses can serve as advocates for communities, and in particular for vulnerable populations such as infants and children, the elderly, the disabled, the mentally ill, and for the safety of other nurses in disaster response. Previous literature describes models for disaster nursing leadership (Demi & Miles, 1984). These models will need to be updated and expanded to meet the challenges of the future. Nurses also need to move into leadership positions in politics, public policy, civic administration, education administration, and emergency management systems. Nurses will have the competencies to be in these positions *if they prepare themselves for them.* Clearly, nursing knowledge of the health care process, diagnosis, planning, treatment, and evaluation is an asset. Additional preparation in all phases of disaster planning and management, health promotion, risk reduction, disease prevention and illness and disease management, information and health care technologies, and human resource management will prepare nurses for positions of leadership. Effective leadership in disaster management requires personal integrity, strength, flexibility, creativity, and use of collaborative approaches.

Roles and Functions

What will be the roles and functions of nurses in disaster response? Nurses need to define what their roles will be across the disaster continuum and across many diverse types of organizations. Clinician, planner, director, coordinator of care, scientist, educator, and colleague to public health, these roles must be defined by nursing. Supportive work environments must be created. As has been evident in the past decade, nursing has undergone major changes in its roles and functions. Reduced staffing levels required that nurses develop new strategies and interventions to ensure that patients receive the care they need, including support and patient education. Disaster nursing in particular will also require new strategies and interventions in order for nurses to render care in nontraditional care settings, to potentially large numbers of patients, while under great stress and with limited resources. The field of disaster management has historically been viewed as the domain of the emergency management field, police, fire department, EMS, and hazardous material management teams. Although nurses have been successful in developing new and advanced roles in acute care, home care, and ambulatory care, nursing must now *clearly articulate what its role will be in disaster management* and work to get involved. Advanced practice nurses will play greater roles in these areas, too.

Policy Development

Why will health care policy development be important? Health care policy provides direction and standards with regard to health care delivery, reimbursement, evaluation, and education of health care professionals. Changes in disaster health care policy will target new emphasis on the nation's public health infrastructure, information technology and communications systems, immunization and antibiotic therapy guidelines, educational preparation, and numerous other aspects of daily health care practice. Nurses need to understand and participate in the health care policy development process in respect to disaster preparedness and response as planners, policy makers, educators, individuals, members of a community, and members of professional organizations. This requires knowledge of the process at the levels in which it occurs: local, state, national, and political representation at the individual as well as the organizational level. Globalization is frequently discussed in all areas of health care today, including disaster relief. Nurses have been involved in international policy development through the International Council of Nurses and the World Health Organization. This will become more important as boundaries that separate one country from another become less rigid, accessibility is improved, and the number and scope of disasters continue to increase.

Government Organization

How will changes in the structure and functioning of the federal government impact the health care system and the National Response Plan?

Public Health

How will changes in the structure and governance of the U.S. public health system impact nursing? The neglect of the public health infrastructure for the past 20 years had a major impact on population-based health care and nursing and on the nation's entire emergency preparedness capabilities. The sizable funding stream provided to states through the Health Resources and Services Administration and the Centers for Disease Control and Prevention cooperative agreements should help to reverse the problem, but it will not be a cure. Years of chronic underfunding and lack of planning will not be corrected overnight. The creation of additional programs and positions involving public health nurses in health promotion disease surveillance and disease management will depend on the fiscal priorities of each state and local health department.

Surveillance

Disease surveillance and containment are interventions designed to prevent or mitigate the consequences of disease. Disaster nursing will demand close collaboration with public health colleagues in areas where health promotion and disease prevention strategies will play a critical role in achieving health outcomes for populations affected by disasters. Nursing needs educational programs that are visionary and unique—providing knowledge and skills regarding health promotion and technology and leadership in complex health care systems.

Quality Care

What is quality care in disaster nursing, and can we find a way to provide quality care in the case of a mass casualty event? Quality in health care has always been difficult to define. The definition is highly dependent on who is defining it (e.g., provider, insurer, consumer). Disaster response is no different. Staffing is a major predictor of quality of care, and the issue of adequate nurses during a disaster response must be addressed. Although most state and county health departments have spent considerable time ensuring that systems are developed and put in place to handle a disaster or mass casualty incident, their initiatives have focused almost universally on responding to a sudden demand for increased inpatient hospital-bed capacity. These plans have proposed strategies to increase the overall number of community beds; however, little attention has been paid to address the issue of nurse staffing for these additional patients. In the event of a major disaster, where will the nurses come from to care for these patients, and will these nurses be adequately prepared? What if a disaster occurs and there are 500 casualties, 5,000 casualties, or 200,000 casualties? Simultaneously, we are experiencing a nursing shortage that, if unaddressed, will be more severe and longer in duration than those previously experienced. If a major terrorist attack or disaster were to occur amid the current nursing shortage, these forces would combine to create the "perfect storm" for the health care system, with devastating consequences to patient safety across all health care settings and to overall public health outcomes.

Efforts have been made to address this situation. For example, the American Nurses Association announced in June 2002 that they would work with the Department of Health and Human Services, ASPR, and the Public Health Service to establish a National Nurses Response Team (NNRT). The NNRTs are dedicated to responding to a presidentially declared disaster to provide mass immunization or chemoprophylaxis to a population at risk. This initiative represents an excellent beginning to address nurse staffing during disasters. Much more, however, remains to be done. Now and in the future, decisions regarding funding of disaster response initiatives will be subject to funding constraints due to the unpredictable nature of the events. There must be balance between quality and cost containment because both are important. Disaster nursing research can provide empirical evidence on which to base quality decisions. Nurses must play a role in this process in order to contribute to the process of quality care. There are currently ten NNRTs across the United States.

Evidence-Based Practice

Where do we go in disaster nursing, and who will be the disaster nurse researchers? The evaluation of health care outcomes has been important for a long time; yet, the empirical evidence supporting disaster nursing is minimal. Much of the lack of evidence is due to the challenging nature of research conducted under disaster conditions. Evaluation of every phase of the disaster continuum and all nursing interventions is paramount for advancing the field of disaster nursing.

Education

What are the educational needs of nurses? This is a critical question. Nursing education must adjust rapidly to

the changing health care environment and must provide content that prepares graduates to work in an environment where the potential for a disaster or mass casualty incident is real. Relevant clinical content is important. In addition, students need to have content on the following: all-hazards disaster planning, disaster management and response, the National Response Plan, collaboration across agencies and health care delivery systems, disaster nursing leadership and management, delegation, decision making, short-term and strategic planning, communication systems, legal and ethical issues, disaster health care policy development, and a multitude of other topics related to nuclear, biologic, chemical, and radiological events. This content should be provided to all students majoring in nursing. All nurses who practice in all types of settings must obtain certain disaster nursing core competencies. In addition, nurses who are already in practice cannot be ignored. They need updates on disaster content through continuing education. Nurses must be prepared to assume leadership roles in national emergency preparedness, and this cannot be done without knowledge and skills.

Critical Thinking Skills

Why is critical thinking important to disaster nursing? The inherent nature of the disaster condition mandates that providers are critical thinkers who can remain calm, rapidly assess situations, consider options, and enact the emergency response plan. New problems will need to be addressed. Time will be of the essence. Flexibility, a preparedness to assume responsibility and risk, and strength of character are just a few characteristics of the disaster nurse leader. An ability to triage situations as well as patients and prioritize and delegate limited resources are also key components of the role. Critical thinking requires risk taking, not formulaic response.

Collaboration

What will be gained from collaboration? The complexity of the health care delivery system in response to disasters requires many skills, and no one health care profession has all of the necessary skills to provide all the care to large masses of patients. Interdisciplinary teams and cross-agency collaboration are critical. The future will bring other new organizations and their members. Nurses need to develop the necessary skills to participate and to lead effectively on the team (e.g., communication, delegation, coordination, negotiation). An important issue will be the need for more interdisciplinary disaster preparedness educational experiences—students from the various health care professions learning together in field exercises and participating in clinical and administrative conferences together. Learning separately makes it very difficult to expect spontaneous collaboration under the pressure of real-life disasters. Interdisciplinary learning environments enhance interdisciplinary functioning in practice.

Opportunities

Why are opportunities for nurses important? Stepping out and taking on leadership positions in disaster and emergency preparedness by defining needs and creating innovative strategies to resolve problems are critical. To see into the future and its possible opportunities means that nursing must *rethink current educational strategies* in order to prepare new nurses with the skills that will be needed for new roles and functions.

As disasters continue to grow in their magnitude and frequency, disaster response plans will be developed, implemented, evaluated, and modified for use during the next event. While the nuances of a disaster response plan will probably stay consistent, the structure of the federal and state agencies responsible for coordinating the response may change. Nurses must remain current about the status of the National Response Plan and the organizational responsibilities of collaborating agencies.

In the meantime, the national nursing workforce must face its own issues regarding professional emergency preparedness. Nursing must become part of the solution before a disaster occurs. Attention to professional issues like leadership, educational preparation, nursing science, and establishing or enhancing collaborative relationships with other disaster providers is paramount if we are to be ready when disaster strikes.

The information presented in this chapter has been verified up to the date of submission for publication; however, references and resources frequently change. Readers are encouraged to visit the FEMA Web site at http://www.fema.gov and the Department of Homeland Security Web site at http://www.whitehousex.gov/deptofhomeland/ for the most current available information. No-cost training (DHS, 2006c) information is available at: http://www.training.fema.gov/EMIWeb/IS/IS%20Brochure.doc (Table 2.2).

Links to Learn More

SPONSOR	TITLE/DESCRIPTION	WEB ADDRESS
Department of Homeland Security	National Response Plan (Base and annexes) Notice of Change to the National Response Plan (May 25, 2006) Quick Reference Guide for the National Response Plan (May 22, 2006)	http://www.dhs.gov/dhspublic/interapp/editorial/editorial_0566.xml
Federal Emergency Management Institute, Department of Homeland Security	IS-100: Introduction to Incident Command System, I-100 As an introduction to the Incident Command System (ICS), this course provides the foundation for higher-level ICS training. This course describes the history, features and principles, and organizational structure of the Incident Command System. It also explains the relationship between ICS and the National Incident Management System (NIMS).	http://training.fema.gov/EMIWeb/IS/is100.asp
Federal Emergency Management Institute, Department of Homeland Security	IS-200: ICS for Single Resource and Initial Action Incidents ICS 200 is designed to enable personnel to operate efficiently during an incident or event within the Incident Command System (ICS). ICS-200 provides training on and resources for personnel who are likely to assume a supervisory position within the ICS. (0.3 CEUs)	http://training.fema.gov/EMIWeb/IS/is200.asp
Federal Emergency Management Institute, Department of Homeland Security	IS-700: National Incident Management System (NIMS), and Introduction On February 28, 2003, President Bush issued Homeland Security Presidential Directive-5 (HSPD-5). This directive instructed the Secretary of Homeland Security to develop and administer a National Incident Management System (NIMS). The NIMS provides a consistent nationwide template to enable all government, private-sector, and nongovernmental organizations to act in concert during domestic incidents. This course explains the purpose, principles, key components, and benefits of NIMS. It also contains "Planning Activity" screens giving you an opportunity to practice some planning tasks. (0.3 CEUs)	http://training.fema.gov/EMIWeb/IS/is700.asp
Federal Emergency Management Institute, Department of Homeland Security	IS-800: National Response Plan (NRP), an Introduction The National Response Plan, or NRP, specifies how resources of the federal government will work in concert with state, local, and tribal governments, as well as the private sector to respond to Incidents of National Significance. The NRP is predicated on the National Incident Management System (NIMS). Together, NRP and NIMS provide a nationwide template for working together to prevent or respond to threats and incidents regardless of cause, size, or complexity. The IS-800 course is designed primarily for Department of Homeland Security (DHS) and other federal department/agency personnel responsible for implementing the National Response Plan. State, local and private sector emergency management professionals will also find great benefit by taking this distance learning course. (0.3 CEUs)	http://www.training.fema.gov/emiweb/IS/is800.asp
Department of Homeland Security	National Disaster Medical System	http://www.oep-ndms.dhhs.gov/
Office of the U.S. Surgeon General, Department of Health and Human Services	Medical Reserve Corps	http://www.medicalreservecorps.gov/HomePage

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APRN Education for Emergency Preparedness and All Hazards Response: Resources and Suggested Content

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APRN Education for Emergency Preparedness and All Hazards Response: Resources and Suggested Content 2007

Background

Given the world situation since September 11, 2001, and the subsequent high impact events, advanced practice registered nurses (APRNs) are essential participants in all hazards response. A National Panel of experts and nursing stakeholders (see Appendix) convened to identify *suggested* curriculum content to guide APRN education in emergency preparedness and response to high impact events. The National Panel agreed to use an adapted version of the "Emergency Response Clinician Competencies in Initial Assessment and Management" (hereafter referred to as the HRSA competencies) as the organizing framework for this document. The Association for Prevention Teaching & Research (APTR), in collaboration with the Center for Health Policy/Columbia University School of Nursing, developed these nationally-vetted 11 clinician competencies currently promulgated by the Health Resources and Services Administration (HRSA) in their use for evaluating *Bioterrorism Training and Curriculum Development Program* (BTCPD) sites. The National Panel has delineated suggested APRN educational broad concepts and considerations for development of content within the HRSA competencies framework.

Guide to Using this Document

The purpose of this document is to be a resource to APRN educators and is not meant to be prescriptive. It attempts to provide a framework that reviews the roles and opportunities for APRNs in all phases of disaster response: planning, event response, recovery, and mitigation. Recognizing that educators may find it overwhelming to consider integration of all the suggested content, the National Panel identified the critical content areas that should be considered. See section "**APRN Competencies and Content at a Glance"** for the competencies and the critical content areas. **Table 1** then provides a comprehensive overview of the suggested educational concepts, content, and associated content resources to prepare APRNs to meet the HRSA/Columbia U competencies.

The panel realizes that the depth in which APN programs may want to consider this suggested content will vary depending on their interest, geographical location, mission and vision of their programs, and inherent disaster risks to their surrounding communities. Educators might pick and choose from Table 1 the content and resources that capture the critical content areas and are most-suited to their programs. The suggested areas of content can easily be integrated into courses currently being offered, or as one stand alone course, or as multiple courses making up a specific specialty or major and/or for continuing education courses and conferences.

Example of selected content integration: An example of integrating some of the suggested content into existing courses and incorporating with other content areas could be as follows:

Within population health/community service learning, leadership, and/or APN role courses: *(HRSA Competencies number 1, 2, 8 and 9):* Leadership and membership on teams in emergency preparedness and response (NIMS, ICS, HICS)***;*** Surveillance Systems for terrorist agents***;*** Community Response to Emergencies and Disasters***;*** Roles of the APN in Emergency and Disaster Response

Ethics Course or Content Area *(HRSA Competency 2 and 6)*: Triage and rationing of limited resources

Research and Theory Course(s) *(HRSA Competency 11):* Program Evaluation***;*** Research in Disasters (lack of)

Specific content areas *(HRSA competencies 3-10):*
Respiratory Conditions: Pneumonic Plague (Biological Agent)**;** Inhalation Anthrax (Biological Agent)**'** Tularemia (Biological Agent)**:** Lung Damaging and Choking Agents (Chemical Agent)

Dermatologic Conditions: Bubonic Plague (biological agent); Cutaneous Anthrax (biological agent); Small Pox (biological agent); Blister/Vesicants (Chemical Agent); Burns related to radiation (nuclear/radiological agent).

Neurological Disorders: Botulism (bio agent)**;** Nerve agents (chemical agent)

Infectious Diseases: Personal Protective Equipment (along with discussions of isolation/respiratory precautions etc.); Small Pox (bio agent); Viral hemorrhagic Fevers (bio agent); Plague (bio agent)

Cancer Treatment: Nuclear/radiation sickness/exposure (nuclear/radiological agent)

Trauma: Blast, explosive agents/events (Explosive agents)

Psych Mental Health: PTSD (related to Emergency and disaster situations)***:*** Management of Concerned Citizens (worried well)

Glossary

The following is a glossary of acronyms and terms used in this document.

CBRNE	Chemical, Biological, Radiological, Nuclear and Explosive (and includes influenza)
DHS	Department for Homeland Security [U.S. Government]
DOD	Department of Defense [U.S. Government]
DPH	Department of Public Health
EOC	Emergency Operations Center
FEMA	Federal Emergency Management Agency [DHS]
HHS	Department of Health and Human Services
HICS	Hospital Incident Command System
High Impact Event	Includes CBRNE, emerging and re-emerging infectious diseases, including pandemic influenza, natural disasters, and other high impact events resulting in multiple, possibly mass, casualties.
IED	Improvised explosive devices
JIC	Joint Information Center
JIS	Joint Information System
JC	Joint Commission on Accreditation of Healthcare Organizations
MCI	Mass Casualty Incident
NGO	Non-Governmental Organization (e.g., American Red Cross)
NIMS	National Incident Management System
PPE	Personal Protective Equipment
PTSD	Post traumatic stress disorder
START	Simple Triage and Rapid Treatment
JumpSTART	Pediatric MCI Triage Tool. Principles of multicasualty triage

APRN COMPETENCIES & CONTENT AT-A-GLANCE

The National Panel adapted slightly the nationally-vetted 11 clinician competencies originally developed by the APTR and Columbia University ("Emergency Response Clinician Competencies in Initial Assessment and Management") and subsequently promulgated by HRSA in evaluating *Bioterrorism Training and Curriculum Development Program* (BTCPD) sites. Listed with each competency is the suggested, critical content to include in APRN curricula. This "**Content At-A-Glance**" may help to guide APRN educators in selecting content to infuse into the curriculum to ensure that all APRNs have a foundation of knowledge for disaster response. For the full breadth of suggested content for the curriculum, see Table 1, which includes broad concepts, content areas, and resources that correspond with the competencies.

Competency 1: Describe expected role in emergency response in the specific practice setting as a part of the institution or community response

Suggested Content

- Review of common roles that the APRN may assume in disaster planning and response: leader/manager, interdisciplinary team member, physical and mental health care provider.
  - ✦ The role that the APRN will play will be contingent upon the mission of the employing agency.
  - ✦ Primary roles for APRNs will likely include management and supervision of care, along with provision of direct care, to individuals or populations
- Identification of institutional response plan and designated role

Competency 2: Respond to an emergency event within the emergency management system of the clinical practice, institution and community

Suggested Content:

- The Incident Command system - an overview of the ICS (that will be comparable to the IS 100 Course that can be taken online thru FEMA)
- At least one simulated event or table top requiring minimally verbalized response that shows ability to respond within a planned system

Competency 3: Recognize an illness or injury as potentially resulting from exposure to a biologic, chemical or radiological agent and explosive-incendiary devices possibly associated with a terrorist event: a) recognize uncommon presentations of common diseases and distinguish these from common presentations of uncommon diseases that may be related to a terrorist event or emerging infectious disease; and b) recognize emerging patterns or clusters of unusual presentations

Suggested Content:

- Review of Class A biological agents and selected other biological or chemical agents (nerve agents, cyanide, vesicants, pulmonary agents and riot control agents), radiation and incendiary/explosive devices, including common symptoms.
- Active and passive surveillance systems as source of alerts to clinicians, including (active) individual case reporting or case finding, and (passive) ED complaint logs, EMS call type logs, pharmaceutical sales for prescription and OTC drugs).
- Clinical case review requiring differential diagnosis of at least some of these conditions

Competency 4: Institute appropriate steps to limit spread, including infection control, decontamination techniques, and use of appropriate personal protective equipment

Suggested Content:

- Types of precautions and recommended methods or precautions (based upon procedures of employer and suspected organism or agent)
- Correct selection of appropriate level of Personal Protective Equipment (PPE) to a situation/event.
- Principles of and techniques for decontamination
- Monitoring of decontamination staff for illness or injury during or after the process

Competency 5: Report suspected or identified cases or events to the public health system to facilitate surveillance and investigation using the established institutional or local communication protocol

Suggested Content:

- Accurate completion of required reports to appropriate organizational unit
- Regulations for reporting communicable diseases and reporting process

Competency 6: Initiate patient care within your professional scope of practice and arrange for prompt referral appropriate to the identified condition(s)

Suggested Content:

- Accurate description of priorities for process:
  - ✦ Scene safety, keep yourself safe, triage for mass casualty and epidemics
- Description of initiation of care and either continuing or referring, always using the most up to date information, with situation/case examples

Competency 7: Use reliable information sources for current referral and management guidelines

Suggested Content:

- Identification and utilization of standard, reliable resources: CDC, State Department of Health, NIH, Professional Organization guidelines, etc.

Competency 8: Provide reliable information to others (e.g., institutional administration or media), as relevant to the specific practice site and emergency response protocol

Suggested Content:

- Description of the communication chain of command within the organization and between the organization and the media or external agencies. Distinction of the PIO or designee to speak for the organization.

Competency 9: Communicate risks and actions taken clearly and accurately to patients and concerned others

Suggested Content:

- Basic principles of risk communication

Competency 10: Identify and manage the expected stress/anxiety associated with emergency events, making referrals for mental health services if needed

Suggested Content:

- Application of basic crisis recognition and intervention techniques, such as
  - ✦ Understanding importance of and is able to locate appropriate sources for psych mental health follow up
  - ✦ Recognizing symptoms of fellow responder decompensation
  - ✦ Recognizing the importance of periodic rest for responders

Competency 11: Participate in post-event feedback and assessment of response with the local Emergency Management and public health system and take needed steps to improve future response

Suggested content:

- Articulating the essential elements of a post event response evaluation.
- Demonstration of case example

TABLE 1. APRN COMPETENCIES WITH COMPREHENSIVE SUGGESTED CONTENT & RESOURCES

This table provides a comprehensive overview of the *suggested* educational concepts, content, and associated content resources to prepare APRNs to meet the adapted HRSA/Columbia U/APTR competencies. This material builds on the above "Content at a Glance" and includes extensive content and resources from which educators may pick to integrate into curricula. The National Panel realizes that the depth in which APRN programs may want to consider this suggested content will vary depending on their interest, geographical location, mission and vision of their programs, and inherent disaster risks to their surrounding communities. As stated previously, the suggested areas of content can easily be integrated into courses currently being offered, as one stand alone course, or as multiple courses making up a specific specialty or major and/or for continuing education courses and conferences.

COMPETENCIES HRSA/Columbia U/APTR	APRN EDUCATION BROAD CONCEPTS	CONSIDERATIONS FOR DEVELOPMENT OF CONTENT	RESOURCES
1. Describe expected role in emergency response in the specific practice setting as a part of the institution or community response.	The APRN assumes the role of manager and/or team member as appropriate in disaster preparedness, response, & recovery: 1. Incorporates a pro-active role in anticipation of the risks and vulnerabilities of the institution and community. 2. Seeks involvement in the All Hazards Disaster Planning efforts and policies of local healthcare & other institutions and communities. 3. Understands/analyzes the health care and public health systems and other sectors with which they interact. 4. Understands federal, state and local legislation related to the Public Health Security and Bioterrorism and all hazards responses. 5. Assumes a healthcare leadership role, as appropriate.	Understanding the institutional and community disaster plans where they practice Designing and/or participating in the development of institutional and community disaster plan(s) Understanding own institutional emergency/disaster response plan and one's own role Understanding the basic tenets of the HICS (Hospital Incident Command System) ➢ National Response plan ➢ National Incident Management System Understanding the process for conducting a community level hazards vulnerability assessment and its implications for planning. Understanding the importance for developing linkages and relationships with: ➢ Interagency groups ➢ Mutual Aid Cross-jurisdictional agreements ➢ Other health care agencies and organizations working together during a MCI- Development of Memorandums of Understanding with other health care facilities and agencies ➢ NGOs ➢ Non-medical workers and volunteers ➢ law enforcement	The nature of this curriculum guidance for APRN education is based on high impact events that are likely to initiate a local, state, and/or National response and as such the suggested references are predominantly from the state and national and/or organizational level. It is important to use resources and references that are **routinely reviewed, updated and revised as appropriate as best practices may change** based on the best available evidence and lessons learned. They serve as resources for consideration for further information regarding the suggested content. National Response Plan (NRP) **http://www.dhs.gov/xprepresp/committees/editorial_0566.shtm** National Response Base Plan and Appendices *(PDF, 114 pages, 2MB)* • Full Version *(PDF, 426 pages, 4MB)* including all annexes, "Emergency Support Function Annexes", "Support Annexes", and "Incident Annexes." • Notice of Change to the National Response Plan *(PDF, 51 pages - 451 KB)* • Quick Reference Guide to the National Response Plan

COMPETENCIES HRSA/Columbia U/APTR	APRN EDUCATION BROAD CONCEPTS	CONSIDERATIONS FOR DEVELOPMENT OF CONTENT	RESOURCES
		➢ other cooperative health care and disaster agencies ➢ Identifying the likely emergency response functional role they would likely be asked to assume; is able to describe how they would be trained for that role	• *(PDF, 27 pages - 315 KB)* FEMA Independent Study Program: IS-800.A National Response Plan (NRP), An Introduction **http://www.training.fema.gov/emiweb/IS/is800a.asp** National Incident Management System (NIMS) http://www.nimsonline.com/ http://www.training.fema.gov/emiweb/is/is700.asp Incident Command System (ICS) http://training.fema.gov/EMIWeb/IS/is100.asp Incident Command System (ICS) advance http://emilms.fema.gov/is200_ICS/index.htm ICS for applying ICS to Healthcare Organizations http://emilms.fema.gov/IS200HLC/index.htm http://www.training.fema.gov/EMIWeb/IS/ICSResource/index.htm *Mass Medical Care with Scarce Resources: A Community Planning Guide.* Chapter II. Ethical Considerations in Community Disaster Planning and Chapter III. Assessing the Legal Environment Concerning Mass Casualty Event Planning and Response. www.ahrq.gov/research/mce/mceguide National Strategy for Pandemic Influenza www.pandemicflu.gov

COMPETENCIES HRSA/Columbia U/APTR	APRN EDUCATION BROAD CONCEPTS	CONSIDERATIONS FOR DEVELOPMENT OF CONTENT	RESOURCES
			Joint Commission Guide to Emergency Management Planning in Health Care www.jcrinc.com/1022 JCAHO Emergency Management Standards Handbook of Bioterrorism and Disaster Medicine 2006. Springer Publishing Company www.springerlink.com/content/j413881268uu1130/ Bioterrorism and Emergency Preparedness Program http://www.ahrq.gov/path/biotrspn.htm Urban Institute report on Katrina http://www.urban.org/afterkatrina/ Homeland Security Presidential Directive /HSPD- 7 www.fas.org/irp/offdocs/nspd/**hspd-7**.html National Infrastructure Protection Plan: Sector Overview http://www.dhs.gov/xlibrary/assets/NIPP_SectorOverview.pdf
2. Respond to an emergency event within the emergency management system of the clinical practice, institution and community.	1. Encourages a climate of mutual trust and effective communication through partnerships with other cooperative health care and disaster agencies, and all other critical sectors*. (*DHS 17 Critical Infrastructure (CI)/Key Resources (KR)sectors). 2. Understands the role and infrastructure of healthcare personnel within the context of the national, state, and county	Within the principles of the Incident Command System: Scene assessment & situational awareness Estimating current and projected needs: ➢ Medical supplies/equipment ➢ Pharmaceuticals ➢ Laboratory support ➢ Providers ➢ Mental health support ➢ Veterinary services for sick or deceased animals ➢ Mortuary personnel	Emergency Preparedness: **26 web-based distance learning modules on emergency preparedness.** International Coalition for Mass Casualty Education available at http://webapps.nursing.vanderbilt.edu/incmcelauncher/ Mass Medical Care with Scarce Resources: Strategies and Tools for Community Planners. Chapter IV: Pre-hospital Care and Chapter V: Hospital/Acute Care, Chapter VI:

COMPETENCIES HRSA/Columbia U/APTR	APRN EDUCATION BROAD CONCEPTS	CONSIDERATIONS FOR DEVELOPMENT OF CONTENT	RESOURCES
	response plan, and NIMS 3. Recognizes the implications of an event being a crime scene. 4. Anticipates and facilitates the plan for sheltering in place and or evacuation of patients or populations. 5. Actively assesses availability of organizational and community resources in response effort. 6. Recognizes the need to employ disaster triage model in order to allocate scare resources.	➢ Food, potable water, shelter, rest, and health care for those involved in search, rescue, and health care at the scene ➢ Security ➢ Developing a Plan B: Working within the constraints/reality of what is available to you at the time and until other assistance arrives. Recognizing roles of others including federal, state, local law enforcement, health care, disaster agencies and organizations depending on the reality of the situation and available resources. Assuming a leadership role, as appropriate, in guiding colleagues, subordinates, lay volunteers and others to assist with the appropriate management of multiple victims and casualties in the midst of the initial and ongoing confusion of high impact events. ➢ Educating ➢ Delegating ➢ Supporting Managing and prioritizing multiple simultaneous roles as needed during the crisis: ➢ delegator ➢ communicator ➢ provider ➢ coordinator of care ➢ educator ➢ coach ➢ advocate for o populations o patients o families o health care workers o volunteers.	Alternative Care Sites, Chapter VII Palliative Care www.ahrq/research/mce/mceguide HICS : http://www.emsa.ca.gov/hics/hics.asp National Infrastructure Protection Plan: Sector Overview http://www.dhs.gov/xlibrary/assets/NIPP_SectorOverview.pdf Mass Medical Care with Scarce Resources: Strategies and Tools for Community Planners. Chapter IV: Pre-hospital Care and Chapter V: Hospital/Acute Care, Chapter VI: Alternative Care Sites, Chapter VII Palliative Care www.ahrq/research/mce/mceguide

COMPETENCIES HRSA/Columbia U/APTR	APRN EDUCATION BROAD CONCEPTS	CONSIDERATIONS FOR DEVELOPMENT OF CONTENT	RESOURCES
		Managing and assisting with triage of victims for the appropriate level of care within the constraints of available resources. (*Standards of Care Appropriate to Situations* ➢ Standard Emergency Department Triage versus Mass Casualty triage o START: Simple Triage and Sorting for adults o JumpSTART for pediatric patients ➢ Ensuring appropriate minimum documentation and tracking of victims and fatalities. o Utilizing the victim tracking processes that are in use Understanding the plan for controlled entry into and out of security of hospital(s) and or clinics ➢ in case of contamination and/or highly infectious disease (dictated by the MCI agent(s) o infectious o chemical o nuclear o radiological (etc.), o natural disaster Estimating and preparing for surge capacity Making decisions based on need to manage resources. *Standards of Care Appropriate to Situations and ANA Code of Ethics for Nurses* Assessing high impact events to prioritize demands for additional resources Planning health care for increased numbers of victims/patients ➢ Initiating surge capacity within institutions ➢ Facilitating the evacuation of hospital(s) and long term care facilities (*Standards of Care Appropriate to Situations)*	**Triage:** **START (Simple Triage and Rapid Treatment)** The START system, helps prepare emergency personnel to quickly organize their resources to handle multi-casualty emergencies. The START triage system, relies on making a rapid assessment (taking less than a minute) of every patient, determining which of four categories patients should be in, and visibly identifying the categories for rescuers who will treat the patients. www.citmt.org/start/background.htm **The*JumpSTART* Pediatric MCI Triage Tool *and other pediatric disaster and emergency medicine resources*** http://www.jumpstarttriage.com/JumpSTART_and_MCI_Triage.php JumpSTART: Triage and Training (CD) EMS-C (In production) Bioterrorism and Other Public Health Emergencies Tools and Models for Planning and Preparedness *National Hospital Available Beds for Emergencies and Disasters (HAvBED) System: Final Report* Prepared for: Agency for Healthcare Research and Quality U.S. Department of Health and Human Services Task Order No. 8 Contract No. 290-00-0014 Principal Investigator Stephen V. Cantrill, MD HAvBED System which explores the

COMPETENCIES HRSA/Columbia U/APTR	APRN EDUCATION BROAD CONCEPTS	CONSIDERATIONS FOR DEVELOPMENT OF CONTENT	RESOURCES
		➢ Setting up Alternative Care Sites ➢ Developing Mass Care, Mass Prophylaxis, and Shelter in Place strategies. Maintaining a chain of custody as dictated by a high impact event that is considered/designated as a crime scene Understanding the logistical and resource planning necessary for on-going and future community medical operations ➢ Monitoring o current and future weather patterns (drift of the agent(s), potential for hypo/, hyper-thermia etc.) and anticipating their impact on the affected/at-risk population and the search and rescue teams o Critical infrastructure o Priority supply delivery o evacuation routes o Medical capacity o structural and bed status of area facilities o status of utilities, • food availability, • potable water availability • availability of adequate shelter for providers and volunteers • Status of workforce: professionals and volunteers to ensure rest/sleep/work cycles adequate to sustain the effort over time Tracking of patients and fatalities Planning for reunification of families Initiating baseline and ongoing data collection as appropriate for outcomes management.	feasibility of a national real-time hospital-bed tracking system to address a surge during a high impact event resulting in mass casualties. http://www.ahrq.gov/research/havbed *Altered Standards of Care in Mass Casualty Events* Hrrp://www.ahrq.gov/research/mce/ CDC Mass Casualties: In a Moment's Notice: Surge Capacity inTerrorist Bombings.- Challenges and Proposed Solutions http://www.bt.cdc.gov/masscasualties/surgecapacity.asp

COMPETENCIES HRSA/Columbia U/APTR	APRN EDUCATION BROAD CONCEPTS	CONSIDERATIONS FOR DEVELOPMENT OF CONTENT	RESOURCES
3. Recognize an illness or injury as potentially resulting from exposure to a biologic, chemical or radiological agent and explosive – incendiary devices possibly associated with a terrorist event; a) recognize uncommon presentations of common diseases and distinguish these from common presentations of uncommon diseases that may be related to a terrorist event or emerging infectious disease; b) recognize emerging patterns or clusters of unusual presentations.	Identifies etiology , symptoms, treatment and PPE recommendations for selected biological and chemical agents Identifies common symptoms of exposure to radiological agents.	Recognizing the signs and symptoms of selected/most likely illnesses/injuries resulting from high impact events, and implementing appropriate measures, including but not limited to: Syndromal surveillance (active epidemiologic surveillance, designed to rapidly identify or uncover CBRNE attack and/or first cases of emerging or re-emerging infectious illness, such as pandemic flu and includes, but is not limited to, the following: ➢ Large numbers of fatal cases ➢ Pt. presenting with a relatively uncommon bio-terrorism potential disease ➢ Clusters of patients from a single locale ➢ Unusual increase in number of people seeking care, especially with fever, respiratory, or GI complaints ➢ Endemic disease rapidly emerging at uncharacteristic time or pattern ➢ Rapidly increasing disease incidence in normally health population ➢ Illness out of season ➢ Passive surveillance through practitioner reporting <u>Agents</u> A. Emerging or re-emerging infectious diseases including Pandemic Influenza B. CDC Category A Biological agents: ➢ Anthrax ➢ Tularemia ➢ Plague ➢ Viral Hemorrhagic Fevers ➢ Botulism ➢ Small Pox C. Chemical agents ➢ Blister agents	Control of Communicable Diseases in Man, 18th edition of the CCDM was published by the American Public Health Association in 2004, under the editorship of David L. Heymann. The paperback and hardcover editions are both 623 pages. The paperback dimensions are 1.12" x 6.86" x 4.36", hardcover dimensions are 1.32" x 7.34" x 4.40". The ISBN for the hardcover edition is ISBN 0-87553-182-2, the paperback is ISBN 0-87553-242- Centers for Disease Control: Emergency Preparedness and Response: Agents, Disease, & Other Threats – Bioterrorism, Chemical Emergencies, Radiation Emergencies, Mass Casualties, Natural Disasters & Severe Weather, Recent Outbreaks & Incidents http://www.bt.cdc.gov/ HANDBOOKS (all available at website) https://ccc.apgea.army.mil/products/handbooks/books.htm ▪ *Field Management of Chemical Casualties* ▪ *Medical Management of Chemical Casualties The Red Book* ▪ *Medical Management of Biological Casualties The Blue Book* ▪ *Medical Management of Radiological Casualties* ▪ *The Medical NBC Battle Book – USACHPPM Tech Guide 244.* ▪ *Treatment of Biological Warfare Agent Casualties - Field Manual* (AFMAN(I) 44-156)

COMPETENCIES HRSA/Columbia U/APTR	APRN EDUCATION BROAD CONCEPTS	CONSIDERATIONS FOR DEVELOPMENT OF CONTENT	RESOURCES
		➢ Choking agents ➢ **Tissue (**Blood) agents ➢ Nerve agents D. Radiological/Nuclear agents E. Incendiary/explosive device ➢ High-energy explosives ➢ Low-energy explosives F. Suicide bomb G. Improvised Explosive Devices (IEDs) serving as bombs I. Other agents/mechanisms as they may evolve as threats. Man-made: Disruption of public services Commutations Water and power Explosives or the threat there of Other Natural Weather related Geological related Psychosocial consequences of disasters *(e.g., Post traumatic stress disorder (PTSD); panic attack/ high anxiety state* Managing patients presenting with any of the above in accordance with the most current evidence based guidance from the DHS, DPH, DOD, HHS and other medical authorities.	POCKET CARDS: Biologic induced Illness Radiation induced illness Chemical induced illness Blast and Explosions Taking care of yourself….Field Hygiene and Sanitation http://chppm-www.apgea.army.mil/deployment/fm21-10.pdf Radiation pocket guide **-** *Terrorism with Ionizing Radiation General Guidance: Pocket Guide.* http://www.afrri.usuhs.mil/www/outreach/pdf/pcktcard.pdf HAZMAT: Emergency Response Guide http://hazmat.dot.gov/pubs/erg/gydebook.htm Pandemic Flu www.pandemicflu.gov Radiation a. Radiation basics http://www.orau.gov/reacts/define.htm b. Radiation Emergencies http://www.bt.cdc.gov/radiation/ c. Hospital Triage in the First 24 Hours after a Nuclear or Radiological Incident http://www.orau.gov/reacts/triage.pdf d. Acute radiation syndrome http://www.bt.cdc.gov/radiation/arsphysicianfactsheet.asp

COMPETENCIES HRSA/Columbia U/APTR	APRN EDUCATION BROAD CONCEPTS	CONSIDERATIONS FOR DEVELOPMENT OF CONTENT	RESOURCES
			e. Prenatal Radiation Exposure: A Fact sheet for physicians http://www.bt.cdc.gov/radiation/prenatalphysician.asp f. Software to record radiological incidents and assess dose rates http://www.afrri.usuhs.mil/ g. Terrorism with Ionizing Radiation General Guidance: Pocket Guide. http://www.afrri.usuhs.mil/www/outreach/pdf/pcktcard.pdf h. Procedures for managing radiation emergencies (protective clothing, prepping the area, removing contaminated clothing, surveying for contamination and decontamination procedures for wounds and intact skin) http://www.orau.gov/reacts/procedures.htm i. 37 web-based distance learning modules on radiation emergencies (17 CNE-free). Center for Disaster Assistance and Humanitarian Medicine available at http://opep.usuhs.edu/.
4. Institute appropriate steps to limit spread, including infection control, decontamination techniques, and use of appropriate personal protective equipment.	1. Understands legal authority of public health agencies to protect the community from threats and facilitates performances of their role during infection control activities. 2. Implements best practices of safety and protection.	Understanding safety principles associated with the management of victims of CBRNE events Chemical – decontamination and antidotes Biological – surveillance, containment, isolation, and transmission reduction Radiological – Time, distance, and shielding Explosive – Secondary device surveillance and blast injury	Mass Medical Care with Scarce Resources: A Community Planning Guide. Chapter III. Assessing the Legal Environment concerning Mass Casualty Event Planning and Response. www.ahrq/research/mce/mceguide NIOSH Safety and Health Topic: Emergency Response Resources *www.ahrq.gov/research/devmodels/devmodel2a.htm*

COMPETENCIES HRSA/Columbia U/APTR	APRN EDUCATION BROAD CONCEPTS	CONSIDERATIONS FOR DEVELOPMENT OF CONTENT	RESOURCES
		Importance of personal planning and protection ➢ Developing a personal and family/pet care plan of response ➢ Demonstrating familiarity with the Personal Protective Equipment (PPE) available in one's community. ➢ Demonstrating ability to use PPE safely ➢ Assisting others to determine appropriate PPE and to use appropriately ➢ Describing the constraints on clinical practice as the result of wearing PPE ➢ Monitoring personnel for o proper use of Personal Protective Equipment (PPE) o signs of adverse response related to the weight, temperature, and ability of PPE to protect. Planning for isolation of contaminated patients and quarantining as directed by state authorities ➢ Infectious diseases ➢ CBRNE and other dangerous manmade, natural agents and events Establishing a basic decontamination operation, including hot zone, warm zone, cold zone, (in the field), and warm zone and cold zone (in the hospital setting) monitoring of workers, and equipment for contamination, etc. Knowing how to decontaminate victims of various types of incidents Discussing and planning for the contamination of the ER/Hospital in a worse case scenario Discussing and planning for the spread of contamination via "good Samaritans" bringing victims to the hospital and leaving	Development of Models for Emergency Preparedness: Personal Protective Equipment, Decontamination, Isolation/Quarantine, and Laboratory Capacity www.citmt.org/start/background.htm Development of Models for Emergency Preparedness: Personal Protective Equipment, Decontamination, Isolation/Quarantine, and Laboratory Capacity : PPE Classifications www.ahrq.gov/research/devmodels/devmodel2a.htm

COMPETENCIES HRSA/Columbia U/APTR	APRN EDUCATION BROAD CONCEPTS	CONSIDERATIONS FOR DEVELOPMENT OF CONTENT	RESOURCES
5. Report suspected or identified cases or events to the public health system to facilitate surveillance and investigation using the established institutional or local communication protocol.	1. Adheres to protocol for reporting to appropriate health agencies. 2. Adheres to HIPAA regulations within scope of authority, understanding the limitations in a disaster setting.	Knowledge of state regulations for reportable diseases, including agents of terrorism Reporting, tracking, and documenting ➢ suspicious symptoms/signs of biological, chemical, infectious agents, radiological agents to the local Department of Public Health ➢ accurate casualty and resource statistics, data and findings with and to other agencies for effective resource management ➢ accurate victim/patient/fatalities, using effective communication, documentation and tracking procedures	Own State Department of Public Health Web site and resources
6. Initiate patient care within your professional scope of practice and arrange for prompt referral appropriate to the identified condition(s).	1. Initiates and/or provides best practices for management and treatment of conditions created by high impact events. 2. Continually assesses the incident to prioritize treatments and requests for additional resources *(i.e., transport vehicles, providers, medical supplies, volunteers, etc.)*. 3. Initiates triage in response to high impact events in accordance with best practices, and availability of resources. 4. Understand the ethical challenges when requirements exceed the available resources. 5. Ensures a system of tracking is in place for managing patients,	Providing care and ensuring continuity of care based on expertise and scope of practice: ➢ Providing or delegating care (depending on the availability and numbers of medical professionals), including patient management according to the standards of DPH, HHS, JC (joint commission) and community standards. *[In a MCI, this is an essential function for an APRN not so much at the one-to-one level but at the population level and through the rapid education and direction of volunteers and health care workers to function at higher levels than in their usual scopes of practice]* ➢ When possible, allocating resources to match special populations to the appropriate provider or transfer to a supportive environment. Understanding how to assume a leadership role to assist colleagues, subordinates, and lay volunteers with the appropriate management,	Centers for Disease Control: Emergency Preparedness and Response: Agents, Disease, & Other Threats – Bioterrorism, Chemical Emergencies, Radiation Emergencies, Mass Casualties, Natural Disasters & Severe Weather, Recent Outbreaks & Incidents http://www.bt.cdc.gov/ Providing Medical Care with Scarce Resources -Strategies & Tools for Community Planners. www.ahrq.gov/research/mce/ Mass Medical Care with Scarce Resources: A Community Planning Guide www.ahrq.gov/research/mce/mceguide

COMPETENCIES HRSA/Columbia U/APTR	APRN EDUCATION BROAD CONCEPTS	CONSIDERATIONS FOR DEVELOPMENT OF CONTENT	RESOURCES
	referrals, transfers, and dispositions. 6. Maintains sensitivity to the diversity of the population affected and/or at-risk of any casualty event. 7**.** Recognize and respond appropriately to the unique needs of special populations (e.g., pregnant women, newborns, children, those with chronic illnesses & disabilities, the elderly, technology dependent, those in need of palliative care and others).	triaging (and decontamination as appropriate) of multiple victims and casualties in the midst of the confusion of a high impact event. ➢ Using skill sets to provide or delegate task based care (depending on the availability and numbers of medical professionals) patient management according to the standards of DPH, HHS, JC (Joint Commission) ➢ educating, ➢ delegating ➢ supporting Triaging and treatment of victims/patients ➢ Recognizing when the triaging and sorting of victims changes from "caring for the sickest and most in need;" to ensuring the "greatest good for the greatest number with the least amount of harm" ➢ Understanding rationing of health care and resources ➢ Understand prioritizing patients by the appropriate categories (mass care triage vs. usual ED triage depending on the numbers presenting) to preserve the greatest number of lives while preserving scare resources Understanding that adjustment of triage and care standards will be dictated by resource availability. • Revisiting triage and classification decisions as information and/or resources become less or more available. • Suspending normal provider practices, as needed, to delegate to lower level personnel based on their level of skill. • Gaining patient's trust to administer what is essential and move them on to make room for others	OSHA Best Practices for Hospital-Based First Receivers of Victims http://www.osha.gov/dts/osta/bestpractices/firstreceivers_hospital.html **START (Simple Triage and Rapid Treatment** www.citmt.org/start/background.htm **The*JumpSTART* Pediatric MCI Triage Tool *and other pediatric disaster and emergency medicine resources*** http://www.jumpstarttriage.com/JumpSTART_and_MCI_Triage.php Start/SAVE Triage http://www.ncbi.nlm.nih.gov/entrez/query.fcgi?db=pubmed&cmd=Retrieve&dopt=Abstract&list_uids=10159733 *Pediatric Terrorism and Disaster Preparedness: A Resource for Pediatricians*. AHRQ Publication Nos. 06(07)-0056 and 06(07)-0056-1, October 2006. Agency for Healthcare Research and Quality, Rockville, MD. http://www.ahrq.gov/research/pedprep/resource.htm

COMPETENCIES HRSA/Columbia U/APTR	APRN EDUCATION BROAD CONCEPTS	CONSIDERATIONS FOR DEVELOPMENT OF CONTENT	RESOURCES
		o Risk communications is essential to convey caring and empathy for affected populations o The provision of palliative care to those so designated Ensuring patient safety and stabilization within the constraints of the scene for transport to a higher level of care. ➢ Ensuring patient safety and stabilization within the constraints of the work environment for transport to an alternative level of care. ➢ Prioritizing patients for evacuation and transport Concern for overworked and stressed providers. ➢ Recognizing and appreciating the moral and ethical strains that all parties will experience when forced to make hard rationing choices that could potentially be based on minimal data.	White Ribbon Alliance Women and Infants Service Package (WISP) of the White Ribbon Alliance for Safe Motherhood. National Working Group for Women and Infant Need in Emergencies: http://www.whiteribbonalliance.org/Resources/Documents/WISP%20Final%20Version4.pdf or available from: http://www.whiteribbonalliance.org/Resources/Documents/WISP Aeromedical evacuation http://navymedicine.med.navy.mil/Files/Media/directives/5115.pdf
7. Use reliable information sources for current referral and management guidelines.	1. Maintains current knowledge of resources available regarding best practices, guidelines, and legal authorities.	Seeking reliable resources ➢ Given the complexity and nature of high impact events, the rapidly changing national threat level, and the likelihood of a national response; local, state, federal, and professional organization websites which are updated regularly are suggested as initial resources. ➢ Accessing up-to-date reliable websites, federal and state agencies for current, accurate information related to identification and treatment for agents of terrorism. ➢ Recognition that in an actual event, access to online resources may not be available; need to have information available in alternate formats.	Centers for Disease Control: Emergency Preparedness and Response: Agents, Disease, & Other Threats – Bioterrorism, Chemical Emergencies, Radiation Emergencies, Mass Casualties, Natural Disasters & Severe Weather, Recent Outbreaks & Incidents http://www.bt.cdc.gov/

COMPETENCIES HRSA/Columbia U/APTR	APRN EDUCATION BROAD CONCEPTS	CONSIDERATIONS FOR DEVELOPMENT OF CONTENT	RESOURCES
		Identifying and implementing evidence-based and best practices resources from DPH, DOD, JC, HHS, DHS, and other security and health care agencies. Seeking and implementing the most current and best available verbal, electronic, and/or written guidance for treatment and management of victims from local DPH, State DPH, or federal agencies such as HHS, DHS, JC, and other professional organizations and agencies as appropriate. Learning from the experience of others ➢ LLIS –Lessons Learned Information Sharing Systems	LLIS Lessons Learned in information systems. Www.llis.gov Preparedness Directorate, Office of Grants and Training, Department of Homeland Security
8. Provide reliable information to others (e.g., institutional administration or media), as relevant to the specific practice site and emergency response protocol.	1. Functions within the NIMS/HICS chain of command for communication and dissemination of information. 2. Identifies appropriate opportunities to increase public awareness of the APRN's role in all hazard events. 3. Participates in planning groups on a regular basis	Understanding the need for only one identified designee (PIO – Public Information Officer) at a site or scene to communicate with the media and the press to ensure accuracy and confidentiality. Working within the organizational structure of the JIS (Joint Information Systems). Knowing how to prepare statements and utilize the media as a source for the dissemination of important information concerning an event in attempts to inform, control, and direct the public Understanding the key concepts of developing a comprehensive communications plan • Infrastructure • Personnel • Authority • Message	Terrorism and other Public Health Emergencies: A Reference Guide for Media. (2005) US Department of Health and Human Services www.hhs.gov/emergency/mediaguide/pdf or google: HHS Media Reference Guide

COMPETENCIES HRSA/Columbia U/APTR	APRN EDUCATION BROAD CONCEPTS	CONSIDERATIONS FOR DEVELOPMENT OF CONTENT	RESOURCES
		• Distribution targets • Method • Redundancy • Special populations	
9. Communicate risks and actions taken clearly and accurately to patients and concerned others.	1. Understands and utilizes the principles of risk communication with individuals, groups, and agencies. 2. Translates to others the rationale behind triage and rationing of resources. 3. Identifies & implements strategies to address priorities and fears of the community (clients, families, populations). 4. Communicating in a manner that reflects a sensitivity to the diversity of the population affected and/or at-risk of any high impact event.	Definition of Risk Communication and identification of risk communication strategies Valuing interagency linkages: interagency coordination and cross-jurisdictional cooperation. ➢ Establishing and maintaining relationships with local health care agencies, law enforcement agencies, and other cooperative health care and disaster organizations including non-governmental organizations that would collaborate during a high impact event. o Creating a climate of mutual trust throughout the establishment of communication and partnerships o Participating in the planning, implementation and evaluation of disaster drills and simulated a high impact event, at the community level Preparing risk communications that convey caring and empathy for affected populations to engage trust from those at risk. ➢ Anticipating the challenges of managing large numbers of casualties from among many diverse classes and cultures ➢ Developing culturally and spiritually sensitive media and public service announcements with attention to health literacy, the diversity of the population and age appropriateness ➢ Preserving confidentiality, privacy, and cultural awareness as much as possible during the a high impact event,. ➢ Anticipating the need to recruit and	Crisis Emergency Risk Communications by Leaders for Leaders www.cdc.gov/communication/emergency/leaders.pdf or google CDC Risk Communication for Leaders Crisis Emergency Risk Communications by Leaders for Leaders Participant Manual www.bt.cdc.gov/erc Communicating in a Crisis: Risk Communication guidelines for Public Officials Northwest Center for Public Health Practice at the University of Washington School of Public Health and Community Medicine *Emergency Risk Communication for Public Health Professionals* http://www.nwcphp.org/edu/training/courses-exercises/courses/risk-communication National Network of Libraries of Medicine *Health Literacy* http://nnlm.gov/outreach/consumer/hlthlit.html HRSA website http://www.hrsa.gov/healthliteracy/

COMPETENCIES HRSA/Columbia U/APTR	APRN EDUCATION BROAD CONCEPTS	CONSIDERATIONS FOR DEVELOPMENT OF CONTENT	RESOURCES
		develop educational tools to address global, as well as specific event of, prevention, preparation, self-care, treatment, and long-term impact discharge instructions in a variety of languages during a high impact event, as appropriate to the population(s) affected and based on the best available evidence at the time. ➢ Anticipating varied cultural responses from families in relation to mass devastation and fatalities of homes, family members and friends. ➢ Anticipating the spiritual needs of the at risk populations related to the psychosocial consequences of disasters. ➢ Providing for palliative care and spiritual needs for those triaged as "expectant" (given a minimal chance of survival based on resources available) and those caring for them in their final hours.	
10. Identify and manage the expected stress/anxiety associated with emergency events, making referrals for mental health services if needed.	1. Acknowledges and manages conflict between values and beliefs and rationing of resources and care. 2. Anticipates the short and long term psychological consequences of those affected by the event. 3. Recognizes the importance and value of teams, counselors, spiritual/religious personnel, psychiatric-mental health resources and makes referral, as available.	In a culturally appropriate manner: ➢ Planning for the impact and care of the "concerned citizens" on the health care system during a high impact event. ➢ Preparing for assessment and support to providers, rescuers, patients and others at risk for post traumatic stress disorder (PTSD). ➢ Monitoring own and others' emotional responses to the extraordinary and extremes of the experience of MCI. ➢ Enlisting the support and counsel of spiritual and mental health professionals as indicated for patients, survivors, self and others. ➢ Mobilizing mental health teams, counselors, spiritual/religious personnel, psychiatric/mental health resources during MCI. 3. Monitoring others' and own emotional responses to the extraordinary and extremes	Tips for Managing and Preventing Stress: A Guide for Emergency and Disaster Response Workers http://mentalhealth.samhsa.gov/publications/allpubs/KEN-01-0098/ Preparing for the Psychological Consequences of Terrorism: A Public Health Strategy (2003) Board on Neuroscience and Behavioral Health of the Institute of Medicine http://books.nap.edu/openbook.php?isbn=0309089530 Mental Health All-Hazards Disaster Planning Guidance from Substance Abuse and Mental Health Services Administration Disaster Relief Information http://mentalhealth.samhsa.gov/disasterrelief/publications/allpubs/SMA03-

COMPETENCIES HRSA/Columbia U/APTR	APRN EDUCATION BROAD CONCEPTS	CONSIDERATIONS FOR DEVELOPMENT OF CONTENT	RESOURCES
		of the experience of high impact events. ➢ Anticipating the psychosocial consequences of high impact events. Enlisting the support and counsel of spiritual and mental health professionals as indicated for patients, survivors, self and others.	3829/part_four.asp
11. Participate in post-event feedback and assessment of response with the local Emergency Management and public health system and take needed steps to improve future response.	1. Collects data for review; participates in analysis and later development of lessons learned to improve future responses. 2. Incorporates "lessons learned" from post-event evaluations into future disaster planning	Understanding and participating in the development of an after action plan. ➢ Documenting ongoing assessments and adjustments for the effectiveness of the management and interventions at the current and future mass casualty and high impact events. ➢ Learning from the experiences of others from their post event feedback.	LLIS Lessons Learned in information systems = http://www.llis.gov Preparedness Directorate, Office of Grants and Training, Department of Homeland Security
			Other resources: University of Albany, School of Public Health, Center for Public Health Preparedness http://www.ualbanycphp.org/learning/default.cfm . Eight web-based modules ranging from personal preparedness to Emergency Preparedness Training for Hospital Clinicians. CE producing. No costs. Materials under the other Centers for Public Health Preparedness, including the South Central Center for Public Health Preparedness, a joint effort of the schools of public health at the University of Alabama at Birmingham, and Tulane University Other Resources: Veenema, T.G. (2007) *Disaster Nursing and Emergency Preparedness for Chemical, Biological and Radiological Terrorism and Other Hazards.* 2nd Ed. New

COMPETENCIES HRSA/Columbia U/APTR	APRN EDUCATION BROAD CONCEPTS	CONSIDERATIONS FOR DEVELOPMENT OF CONTENT	RESOURCES
			York: Springer Publishers. 25 Module e-Learning Program for Nurses and Nurse Practititoners: http://www.webinservice.com/index.asp?a=Catalog&c=cat2&bsec=29. (Veenema, T.G. (2007)*ReadyRN: Comprehensive Curriculum for Disaster Nursing and Emergency Preparedness .* New York Elsevier/ MC Strategies)

APPENDIX
NATIONAL PANEL ON APRN EMERGENCY PREPAREDNESS AND ALL HAZARDS RESPONSE EDUCATION

William Bester, RN, MSN, CNAA, BC
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Acting Dean, University of the Health Sciences
American Association of Colleges of Nursing

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Clin. Assistant Professor, Georgetown University
American Association of Critical Care Nurses

Ellen Dawson, PhD, ANP
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NNEPI

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Kitty Werner, MPA
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Vision to Action: Global Health Through Collaboration
2-7 November 2007 ~ Baltimore, Maryland USA

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- Tours
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- Scholarship Information
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Be Prepared: What Nurses Need to Kno About Disaster Response

Disaster Preparedness Pre-Conference
2 November 2007 – full-day

FEATURED NURSE LEADERS


Betsy Weiner


Lynn Slepski

Betsy Weiner, PhD, RN, BC, FAAN
Dr. Weiner is the Senior Associate Dean for Educational Informatics and Profes Nursing and Biomedical Informatics at Vanderbilt University School of Nursing. Considered a pioneer in multimedia development (with 25 years of developmer experience in the health sciences), Dr. Weiner is responsible for the distance le programs in nursing and the informatics tools that help tie together the researcl practice, and academic arenas. Prior to joining Vanderbilt in 2000, she served 2 at the University of Cincinnati which included 10 years as director for a universi faculty technology center and four years as director of university academic com

Dr. Weiner also coordinates the school's efforts in leading the International Nur Coalition for Mass Casualty Education as the Associate Director. In this role, sh participated in the development of a five year strategic plan for the Department and Human Services to deliver a national curriculum to healthcare providers for casualty education. She is currently directing the development and implementa online clinical scenarios for all nurses in responding to emergencies resulting fr casualty events. Her current research interests evolve around issues related to learning for emergency preparedness. In addition, she is investigating the

implementation of informatics competencies for advanced practice nurses.

WHO SHOULD ATTEND?

Nurses who want to develop and enhance competencies in disaster prepare and response including: public health, mental health, hospital disaster nursin military, ciritical care, students and faculty.

PROGRAM SCHEDULE

8:30 am – 9:30 am	**Plenary Session** *Multiple Disaster Roles/Functions Nurses Play: Competencies* Plenary Keynote Presentation by: Betsy Weiner, PhD, RN, BC, FAAN Senior Associate Dean for Educational Informatics Professor in Nursing and Biomedical Informatics Vanderbilt University School of Nursing
9:30 am – 9:45 am	**Break**
9:45 am – 11:15 am	**Panel Presentation Session** *Experiences of Nurses in Disaster: Lessons Learned* Panel Moderator: CAPT Lynn A. Slepski, RN, MSN, CCNS, Sr. Public Health Ad Immediate Office of the Assistant Secretary for Infrastructure Protection, Department of Homeland Security
11:30 am – 1:30 pm	**Networking Lunch & Special Presentation of 2007 Nurse H Awards** Sponsored by: Nursing Spectrum/NurseWeek, Publications of Gannett Health Group, The Johnson & Johnson Campaign for Nursing's Futur the Honor Society of Nursing, Sigma Theta Tau International Master of Ceremonies: Cynthia Vlasich, RN, Vice President, Professional Services and Advertising, Nursing Spectrum/Nurs Publications of Gannett Healthcare Group
1:45 pm – 4:15 pm (Break— 3:15pm – 3:30pm)	**Afternoon Presentations I and II** Representatives from a variety of responder agencies will pres information for nurses about the opportunities, benefits, entry requirements, commitments, education and responsibilities of responders.

	Presentation I — *Response Opportunities: Roles for Nurses*
	Presentation II — *F inding Your Own Disaster Response Nich*
4:15pm – 4:30pm	Next Steps

OBJECTIVES

Upon completion of this education activity, the learner will be able to:

- Identify multiple roles played by nurses in disaster situations;
- Explore needs for education and competency development for nurses re disaster situations;
- Describe common experiences faced by nurses in disaster situations;
- Apply lessons learned by nurses who served in disaster situations;
- Examine disaster preparedness and response team models in healthcar institutions;
- Compare disaster preparedness and response curriculum models in sch nursing;
- Describe disaster preparedness and response team models in public he services; and
- List resources for competencies that nurses require for disaster prepare

ADVISORY COMMITTEE

Donna Morgan Dorsey, MS, RN, FAAN
Karen L. Elberson, PhD, RN
CAPT Roberta Lavin, RN, MS
CAPT Lynn A. Slepski, RN, MSN, CCNS
Cynthia Vlasich, RN

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To register for this event, please click here.

2005

US PHS Scientific And Training Symposium

International Nursing Preparedness Community: Roles

CAPT Roberta Lavin and CDR Lynn Slepski

PhD Students USUHS

Purpose

To provide a graphic representation of nursing functions and roles within the critical infrastructure of the public health sector both within the United States and internationally

Nurses in Critical Infrastructure

•Sector Coordinating Council
•Health Professional Subsector (lead)
•Virtually every subsector
•Virtually every other critical infrastructure sector (through occupational health nurses)

WHO Roles

•Preserve life
•Limit excess death
•Hospital care
•Health care for displaced
•vaccinations
•Disaster reduction
•Triage
•Evacuation

Canada
230,000

U.S.A.
•Prevention
•Epidemiology
•Resource coordination
•Policy development, planning and implementation

U.K.
•Community health
•Locally based health actions
•Profile local communities

Russia

France

Japan
650,000
•Immediate response: hospital based care
•Recovery: shelters, temporary houses for basic care/public health services
•Planning, implementing and planning community programs

Italy

Germany
460,000

Critical infrastructure is a “systems and assets, whether physical or virtual, so vital to the United States that the incapacity or destruction of such systems and assets would have a debilitation impact on security, national economic security, national public health or safety, or any combination of those matters.”

International Nursing Coalition for Mass Casualty Education

Gaps

•Credentialing

•Interstate reciprocity of licensure

•International planning

•Inadequate healthcare infrastructures in developing countries and lack of research into infectious diseases

•Communication and coordination

Next Steps

•Enhance information systems

•Identify vulnerabilityes

•Workforce development for public health emergencies

•Partnerships with multilateral agencies, international reseach community, and the private sector

2006

US PHS Scientific And Training Symposium

Emergency Preparedness—Advancing the State of the Science: From Concept Development to Publication

CAPT Lynn Slepski, RN, MSN, CCNS, PhD Student USUHS

Purpose

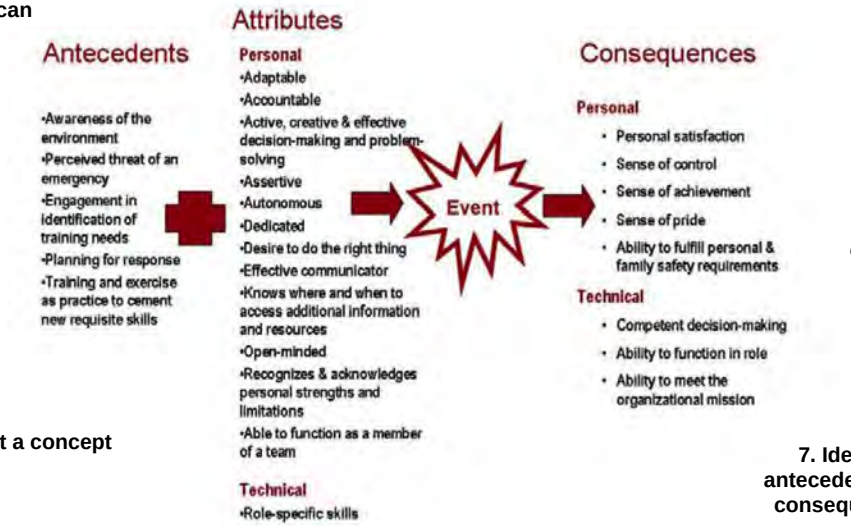
To illustrate how the term "emergency preparedness" was examined and clarified, and how the State of the Science was expanded by the publication of a concept analysis.

Until recently, Emergency Preparedness was a concept that was referred to frequently within medical literature, psychological literature, local, State and Federal documents, but had never been defined. In a definition vacuum, organizations were not clear by what was meant by the term preparedness or how it could be recognized or measured.

4. Determine the defining attributes

3. Identify all uses of the concept that you can

5. Construct a model case



2. Determine aims or purposes of analysis

6. Construct borderline, related, contrary, and invented

1. Select a concept

7. Identify antecedents and consequences

8. Define empirical referents

Why Conduct a Concept Analysis?

According to Walker & Avant (1995), development of a concept analysis can be useful in defining ambiguous terms used in theory, practice, education, and research; providing operational definitions grounded in a theoretical basis; underlying attributes of a concept; and, assisting in the development of research instruments and outcome measures.

New Definition: **Emergency preparedness is the comprehensive knowledge, skills, abilities and actions needed to prepare for and respond to threatened, actual or suspected chemical, biological, radiological, nuclear or explosive incidents, man-made incidents, natural disasters or other related events (Slepski, 2005).**

2007

US PHS Scientific
And Training Symposium

World Association for Disaster and
Emergency Medicine,
Amsterdam, The Netherlands

SCIENTIFIC CONTRIBUTED POSTER PRESENTATIONS CONTINUED

Tropical Storm Ernesto - 2006: Lessons Learned during the First Rapid Deployment Force (RDF) Activation
LCDR Joshua Schier, USPHS, MD

US Public Health Service (USPHS) Rapid Deployment Force (RDF) Teams are the Department of Health and Human Services' (DHHS) designated initial response units for a multi-tiered national response system formed as a result of the 2006 White House Report: Federal Response to Hurricane Katrina - Lessons Learned . This report specifies that "DHHS should organize, train, equip, and roster medical and public health professionals in pre-configured and deployable teams". The USPHS created five "Tier-1" RDF teams. Team members were deployed to a designated staging area in downtown Atlanta in preparation for a full team deployment to a location near the expected impact of Tropical Storm Ernesto (TSE). Although initial expectaions were that TSE would make the landfall along the previously devastated Gulf Coast, the storm changed direction and instead made landfall in Florida on August 30th. The storm then re-entered the Atlantic Ocean, strengthened and made landfall again on the eastern coast of the United States near the North and South Carolina regions. While awaiting the determination of need for federal assistance by affected states, officers received additional training in emergency response operations and identified problems with current procedures for communication operation and planning. RDF - 3 was demobilized on Septermber 1st.

Preliminary Results: Emergency Preparedness and Professional Competency Among Health Care Providers During Hurricanes Katrina and Rita
CAPT Lynn Slepski, USPHS, RN, MSN, CCNS, PhD-C

Up to this time, no systematic examination of the preparedness of health care providers and their response capabilities during the individual phases of a large scale response has occurred. As a result, very little is known about what knowledge, skills and abilities or professional competencies are needed or if these competencies change in each disaster phase. This information is critical in designing effective national response plans and future training content. This poster describes preliminary results of a Phase 1 study of 200 healthcare professionals who deployed in support of victims of Hurricane Katrina and Rita. It describes the specific professional competencies that were important to the response of health care providers during these disaster situations.

Nursing Publication: Get Involved
LCDR Ann Sweeney, USPHS, RN MS

Nurses have an abundance of information based on nursing expertise resluting form life experiences and interaction with patients. Often, the desire to write about learning experiences and acquired knowledge may be surpasssed if a first-time author becomes overwhelmed with the numerous quesitons about where and how to begin the process. Writing can be initimdating. Understanding the process of how to write the requirements for nursing journal abstracts and writing styles of nursing journals, the novice writer can take the first steps in becoming an author. The N-PAC Presentation and Publication subcommittee offers assistance in guiding and supporting individuals who aspie to write. A mentor will guide the writer through step by step instructions on the writing process, from original idea to publication.

Emergency Preparedness and Professional Competency among Health Care Providers during Hurricanes Katrina and Rita: Pilot Study Results

CAPT Lynn Slepski, RN, MSN, CCNS, PhD-C

BACKGROUND: To date, no systematic examination of the preparedness of individual healthcare providers and their response capabilities during a large scale disaster has been conducted. As a result, very little is known about what knowledge, skills and abilities, or *professional competencies* are needed, or how professional competency requirements may change depending upon the circumstances of a disaster. The objective of this IRB-approved pilot study was to collect, explore and describe background data on professional competencies from healthcare providers who were involved in the Hurricanes Katrina and/or Rita disaster responses.

Purpose: To begin to explore, describe and collect background data on professional competencies from health care providers who were involved in the Katrina and/or Rita disaster responses. Data obtained from this preliminary study will form the basis for design of a larger web-based survey to assess the issue of individual health care provider preparedness at the time of Katrina/Rita and elucidate pathways to better performance in the future.

Methods: Utilizing an anonymous survey of a convenience sample, 200 healthcare providers attending two disaster conferences were asked to respond to open ended questions about the competencies they needed and performed during their disaster response.

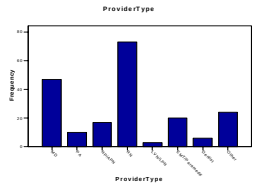


Table 1: Response Experience by Type of Response Group

Type of Group	Experience: First Response	1-4 Prior Responses	5 or > Prior Responses	Total	Percent
American Red Cross	1	1	1	3	1.5
Health and Human Services	1	0	1	2	1.0
Medical Reserve Corps	2	0	1	3	1.5
National Disaster Medical System	28	38	29	95	47.5
US Public Health Services	30	30	12	72	36
Other	7	5	1	13	6.5
Not a member of a group	1	1	1	11	5.5
Total	70	75	46	200	100
Percent	35	37.5	23	100	

Table 2: Competency by Provider Type (only Healthcare Providers)

Competency	Provider Type: MD	PA	NP/ APN	RN	LVN/ LPN	EMT/ Paramedic	Dentist	Total
Admin	20	2	7	28	3	7	4	71
Air Evacuation	2			1				3
Assessment	2	3	7	20		4		44
Basic Clinical Care	20	6	13	23	2	7	1	81
Communications	2			3			1	6
DMORT Support							7	7
Education				4		1		5
Epidemiology	9							9
Immunizations	1		3	13	1	3		21
Liaison			1	11		1	1	14
Logistics		1	1	6	1	5	1	15
Med Admin			1	6				7
Mental Health	8	1		7	1	2	1	20
Needs Assessment	1	1		4				6
Patient Transport								
Pharmacology	4	2	2	3				11
Preventive Med	2					1		3
Respiratory Care	1			4		1		6
Resuscitation	6	1	2	14		3		26
Safety				1		3		4
Site Set Up		1		1			1	3
Special Needs	3		1	2	1			7
Triage	13	2	4	26		5	1	51
Wound Care	7	1	3	10		6		27
Other	12	2	2	12		6		34
Total # Competencies By provider type	17	12	13	21	6	15	9	

Table 3: Reported Areas Where Respondents Felt Least Prepared

N=376	Person	Physical Environment	Social Environment
Expectation n=28	▪ Work hours 24/7 Long hours No breaks ▪ Waiting around ▪ Doing clerical work ▪ Lack of sleep ▪ Rotating shifts	▪ Being sent into an unsafe situation ▪ Severe danger	▪ Hostile public contact ▪ Only medical provider for 500 patients ▪ Chaos ▪ Bureaucracy
Organization n=34			▪ Organization Incident Command System (8) ▪ Management Command Team ▪ Chain of command (8) ▪ Federal/state/local interface
Personal n=19	▪ Didn't know what to bring (7) ▪ Notifying employer ▪ Measures to avoid becoming a victim ▪ Not bringing personal professional equipment		▪ Not knowing team ▪ Communicating w/ and providing support to my family
Resources n=26	▪ Not having the right clothing to wear	▪ Lack of: Food/ Clean water Equipment Medications ▪ Patient transportation out	▪ Lack of discharge planning ▪ Identifying remaining community resources
Scope n=34	▪ Working with… Affected children Affected elderly ▪ Critical care requirements	▪ Storage of deceased ▪ Smell of death	▪ Mental health issues (15) ▪ Major trauma ▪ Mass care/volumes of care ▪ Number of dead
Skill n=82	▪ Ventilator care ▪ Casting ▪ Suturing ▪ How to use PPE ▪ IV access/ therapy ▪ Patient specialties (Pediatric, OB/Gyn, COPD) ▪ How to "make do" without equipment ▪ Specific equipment… O2 concentrator 5 brands of glucose monitors	▪ Putting up a tent ▪ Food/galley inspections ▪ Environmental assessments ▪ Setting up a shelter	▪ Speaking w/ grieving families ▪ Emotional needs of people ▪ Community assessments ▪ Keeping families together
System Issues n=126	▪ Lack of "team" ▪ Not knowing deployment role before they left	▪ Lack of communication (phones down) ▪ Safety/Security issues ▪ Poor living conditions	▪ Lack of current situation/information ▪ How to replace supplies ▪ Who partner organizations were ▪ Getting partners to work well together ▪ "Inefficient medical providers" ▪ Lack of interpreters ▪ Wrong provider skill mix ▪ Formulary wasn't large enough- providers weren't familiar w/ drugs ▪ Lack of mental health resources ▪ No standard documentation
Other n=5			▪ Responding to questions from victims for which there was no answer ▪ What happened after I returned home

(n) includes the frequency of multiple responses

Table 4: Recommendations for Future Responders

Category of Response	Number Total=495	Examples of responses
Attributes or Attitudes	n=105	Included the term "flexible" i.e. "be flexible" (59) Be patient Have a sense of humor
What to Pack	n=66	Have a pack list to remember everything Bring moleskin Bring your own food and water Equipment for the worse case/austere environment
Personal Preparedness	n=115	Prepare yourself mentally to deal with austere conditions Prepare my family for their hardships. Sign medical power for kids Find out as much as you can about where you are going/doing Be ready for anything-be prepared to work in a different role
Self-care	n=26	Make sure you eat and keep hydrated Prioritize work/rest periods for yourself and subordinates
System Issues	n=60	Small library of medical references Standardized forms and reports/ report schedules Protocols and SOPs
Training	n=123	Drill and exercise (9) Non-medical topics—environmental health issues/ ICS/ NRP (19) Field experience—low/no technology (4) Get specific training (15) ACLS (4) Basic skills (1) First aid (2) Suturing (1) Triage (5) Wound care (2)

Results: Registered nurses (37%) and physicians (24%) were the largest categories of respondents. Basic clinical care (39%) and triage (26%) were the most frequent response skills reported; the areas wherein respondents felt least prepared were disaster specific response skills (22%) and systems issues (24%). Only 22% of respondents reported that they did not know a specific skill. The 200 respondents made 495 individual recommendations for future responders including actions to improve the respondent's personal preparedness (23%) and the need for training (25%). However only 3% of the recommendations (N=15) actually identified a specific type of training such as ACLS or triage.

Conclusion: Few respondents reported knowledge deficits. Rather, what they described was an **abrupt change or transition** from their everyday practice worlds that required accommodation in order to practice effectively. Current training programs generally focus on providing skills information. Further research is required to determine if training programs should address facilitating the transition process.

(192) Preparing for the Pandemic Challenge: The United States Government

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Pandemic influenza is a global threat that must be faced with a united purpose and action. The ability to safeguard the world population in the event of a devastating global pandemic only can be assured through cooperation between the stakeholders.

On 01 November 2005, President George W. Bush announced the National Strategy for Pandemic Influenza, a comprehensive approach to addressing the threat of pandemic influenza. This Strategy outlines how to prepare for, detect, and responded to a potential pandemic will be.

This session will describe the series of historic steps taken by the US Government and the Department of Homeland Security to address the pandemic threat. Major initiatives that are in process, include: (1) an Implementation Plan for the National Strategy for Pandemic Influenza and its five guiding principles; (2) an International Partnership for an Avian Influenza Pandemic; (3) tools developed to assist the private sector during such an event like Pandemic Influenza *Preparedness, Response, and Recovery Guide for Critical Infrastructure and Key Resources*; as well as (4) efforts to enhance individual and family levels of preparedness.

Efforts to prevent or contain the disease will require the participation of, and coordination by, all levels of governments and segments of society to be successful.

Keywords: influenza; pandemic; preparedness; United States
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(193) Safe Hospitals, the Mexican Experience

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The Pan-American Health Organization (PAHO) defines a Safe Hospital as, "a health facility whose services remain accessible and functioning at maximum capacity, and in the same structure, during and immediately following the impact of a natural hazard". In this regard, it is understood that for a hospital to adequately protect patients' lives and workers' health, it must have a physical structure that withstands the effects of a natural hazard, while remaining functional and offering vital services.

A safe hospital is not a health facility that is 100% resistant to an earthquake or hurricane, but a structure that, in spite of damages, can continue its operations.

This initiative was endorsed in January 2005 at the World Conference on Disaster Reduction, held in Kobe, Japan, and incorporated into the 2005–2015 Work Plan. It called for states to "integrate disaster risk reduction planning into the health sector and implement mitigation measures to reinforce existing health facilities".

In Mexico, the Civil Protection System is charged with establishing the diagnosis of safety in hospitals in new and existing health facilities, according to PAHO standards. There already is a "Multidisciplinary Group" that is evaluating the hospitals starting with those located in high-risk zones. After completion of the evaluation process, each can be classified. A Certification Process of nearly 1,085 hospitals will begin.

Keywords: accreditation; hospital; Mexico; preparedness; safe hospitals; safety
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(194) Delivering Remote Prehospital Emergency Care Education to Primary Care Facilities in Crete

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The need for the continuing education of emergency care in primary care physicians has been recognized internationally. Despite this need, providing on-site education to remote and isolated areas is difficult, due to a lack of personnel, travel expenses, limited resources, and a lack of time. Health professionals in rural Greek areas have little training in emergency care, despite the fact that emergencies occur daily. The use of information and communication technologies for the remote delivery of medical courses addresses the need and high demand for emergency education, and helps overcome the difficulties of resource scarcity. The Foundation for Research and Technology-Hellas operates a hybrid network for tele-education consisting of wifi, satellite, and terrestrial networks. Several pilot courses have been delivered successfully by the Emergency Medical Service of Crete. The objective of the network is to provide tele-education courses to isolated areas in the South Aegean Islands and Crete. Diversity of expertise increases the interdisciplinarity of the course and expands the target audience. In the East Mediterranean region, it is the first such course to be delivered through tele-education. The quality is monitored through the continuous evaluation of user satisfaction, knowledge retention, and technical quality. The course introduces several innovations in tele-education. Users receive real-time video and audio of all participants, simulating a feeling of a classroom environment. The courses address medical staff, nurses, and ambulance personnel. A preliminary evaluation has shown that emergency education is a high priority for all healthcare providers, and tele-education an acceptable method for its delivery.

Keywords: Crete; distance learning; education; emergency; hospital; prehospital; preparedness
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(196) Hospital Preparedness for Contaminated Patients in Austria: A Survey

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This study is a cross-sectional questionnaire survey of all 118 acute care hospitals in Austria, using the newly devised Hospital Preparedness for Contaminated Patients (HPCP) Score.

In today's world, the risk of contamination incidents is discussed as terrorism-related, but much more it is an occupational safety problem. The relatively scarce epidemiolog-

Said Another Way

Subject Matter Experts: Facts or Fiction?

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Subject matter experts (SMEs) can be valuable resources, but there are no standards or criteria for their selection. The temptation to assert one's self as an SME in the absence of actual expertise is great. As a consumer, where does one turn, how does one know who to believe, and where does one place trust? What constitutes an SME is explored using two methods of how SMEs are developed. The reader is guided through finding, selecting, and validating an SME. The identification of some obstacles in using SMEs is also addressed. The question, "Is your subject matter expert really an expert?" is answered.

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News Anchor: We are bringing you the developing story of yet another white powder incident in a post office. Sir, what do you think happened?

We have all witnessed a developing incident or disaster on our local news stations and have had the experience of changing channels only to see multiple experts dissecting the emerging situation, often offering competing theories and mitigation strategies. Their pedigrees range from science and academia or related industry to retired law enforcement or defense officials. Similarly, we have all been asked to start a project where specialized expertise is needed. Hence, just what is an expert? Where does one find an expert? How does one know if these "experts" are "good"? In the face of conflicting experts, who does one believe? Finally, where do individuals place their trust?

Taking a ride on a fire truck does not make a person a fireman. Yet, with increasing frequency, subject matter experts (SMEs) are, metaphorically, doing just that, and taking us all for a ride in the process. Especially when large-scale crises or disasters emerge, followed by a sudden influx of financial aid to ameliorate the sequelae, the temptation to assert one's self as an SME in the absence of actual expertise is great. Currently, falsification of credentials or exaggeration of scant experience is rampant. Unfortunately, news outlets,

journal editors, university deans, and scholarly societies encourage these behaviors. They seek to promote their own enterprises as current, socially relevant, patriotic, or just plain more marketable by seeking out, partnering with, or hiring self-declared SMEs.

Taking a ride on a fire truck does not make a person a fireman.

An SME or Not an SME . . . That Is the Question

There are no clear standards differentiating an SME from anyone else. Rubin (2004) states that "there is little in the way of functional standards, guidelines, or quality control." This means just about anyone can hang out their shingle and declare themselves an expert. Most often, an organization's expectations for their SMEs are nebulous at best, leading to confusion over the SME's role and place in the organization. To further complicate matters, not all SMEs look the same. Within the health sector, a random sampling of stress management SMEs revealed 80% of the SMEs who specialized in stress management gained their expertise by working in applied stress management, that is, in the field. However, the other 20% worked in academic institutions. Only 55% of the SMEs have conducted any kind of research, quantitative or qualitative, within their field of expertise. The bulk of them (88%) have conducted workshops on stress management in occupational settings. The SMEs ranged in age from 27 to 67 with average age being 45 (Bellarosa & Chen, 1997). So how can one tell a properly qualified SME from a fraud?

At this time, many SMEs are sought from agencies of the federal government due to their assumed content area expertise. The logic, ill-conceived as it is, is if a nurse is employed in a trendy agency, then he or she must be an SME; another version of a "float" nurse. However, the federal government is very clear about how an SME is defined. The Department of Defense definition of an SME is "an individual who, by virtue of position, education, training, or experience, is expected to have greater-than-normal expertise or insight relative to a particular technical or operational discipline, system, or process, and who has been selected or appointed to participate in development, verification, validation, accreditation, or use of a model or simulation" (Pace, 2002). The Department of Defense based this on the legal definition of an expert witness, which states that an expert is "an individual who, by virtue of his or her specialized knowledge and experience, can explain, through competent testimony, a technical matter that lies outside the understanding of the average layperson . . . An expert may base his opinion on facts and documents not in evidence, as long as those facts and documents are reasonably relied upon by experts in his field" (Friedman & Kremen, 1997, as cited in Pace, 2002). This definition is particularly useful because of the passage about the ability of the SME to communicate information to the interested parties. While a masterful understanding of the subject is desirable, without the ability to express oneself clearly, all of this knowledge goes to waste.

SME expertise should encompass three domains: structure, process, and outcome. Structure is their knowledge of their discipline, process is the method by which that knowledge is expanded and verified, and the interaction between structure and process yields outcome (Kasper, 1995). Persons can be expert in one or more of these areas, process for example, without being expert in the others. Process experts are quite capable of performing work within their field, but due to their lack of knowledge of the associated structures, process experts cannot fully comprehend why something is being done, or sometimes take the steps outside of preset protocols to improve outcome (Kasper). Process experts take orders, while SMEs also require the background knowledge to creatively

analyze the situation and make truly insightful recommendations.

SME expertise should encompass three domains: structure, process, and outcome.

Generally, employers expect their SMEs to possess at least a few standard qualities. Those are domain and/or technical expertise, recognized competence, the ability to network, confidence, persuasiveness, availability, independence, and authority. The first, domain and technical expertise, is perhaps the most important part of an SME's role. However, this expertise can be difficult to identify and define. Typically, SMEs develop their expertise through one of two methods: formal education or on-the-job experience. Each method has its own advantages and drawbacks.

SMEs that have developed their expertise over the course of years of formal education are all but guaranteed to possess a genuine understanding of the subject matter. Their professors, deans, and academic review boards monitor their progress throughout the course of their educational career, only allowing SMEs to continue when they achieve competency in the material. The accreditation and peer-review processes work as checks against truly incompetent "experts." Formal training should endow the SMEs with a strong understanding of all the theoretical aspects of the subjects they study. In addition, drawbacks to formal education as a path to expertise are well known. SMEs whose expertise relies too heavily on theories learned through formal education run the risk of developing an "ivory tower" worldview that lacks a strong background in real-world experience. Additionally, formal education tends to encourage specialization, which, when taken too far, can cause a "silo" effect in the field. However, subject matter expertise of academics is easily verified by checking their curriculum vitae, publications, and invited talks. The significance or value of these contributions can be estimated by the frequency with which others cite them in "Scientific Citation Index" and the "Social Science Citation Index" (Staudenmayer, 1997).

The attributes associated with the on-the-job experience path to expert status are the converse. SMEs who develop their skills through years of practical, "boots on the ground" experience generally possess a strong grounding in reality. They know how the system actually works, where the system often breaks down, and the practical ways to get around the problems that lead to the breakdowns. For firefighters, no amount of reading and watching movies like *Backdraft* (Howard, 1991) can compensate for the practical experience of being inside a burning building with your team and a hose. Additionally, SMEs who work in the field possess a greater breadth of knowledge than SMEs whose expertise comes from formal education. In a fire, as in the office, everyone needs to be at least minimally competent to perform everyone else's job. This cross-training leads to greater continuity of operations and easier coordination between players. However, without formal accreditation or oversight, exceptional difficulty is experienced when attempting to differentiate the expert, from the competent, from the boisterously incompetent, unless the persons seeking the SME are also experts in the field. With SMEs who gained their status on the job, the greatest challenge is separating the firefighters from those persons who were just along for the ride.

Other SME Attributes

Testimony

Oftentimes SMEs are hired for their ability to state what is known about a topic. Even in the legal field, where a standard definition exists, it is difficult to assess the validity of expert testimony. In an effort to further standardize the process, the United States

Supreme Court qualified expert testimony on five points that determine the testimony's admissibility. First, the expert's technique must be testable through the scientific method. Second, the technique must be subject to peer review and publication. Third, the expert must express the known or potential rate of error of the operation, in order to properly weigh the reliability of the process on which the testimony is based. Fourth, there must be standards controlling the technique's operation. And, fifth, the technique must be generally accepted in the relevant scientific community. However, a good lawyer, with sufficient funds, can find an expert witness to support any point and testify in opposition to any other expert witness (Young, 1997). While this is somewhat disheartening, a quick perusal of the scientific literature on most topics demonstrates the same result. There is no truly accepted answer on most subjects when it comes to the cutting edge, just competing theories. However, while juries in court will hear at least two competing views, people outside of the courtroom will typically only hear the view of one SME.

Trustworthiness

When working alongside of others, it is imperative that the SME secure the trust of the participants (Pace, 2002). A trusting rapport is essential to avoid what would otherwise result in inevitable clashes over the best course of action. If participants believe the SME may communicate information to a rival or a superior, then they will be less forthcoming. Without trust, participants are less likely to disclose significant information that is necessary for the SME to provide advice and direction regarding the most appropriate course of action.

Independence

Independence has an impact on trust and judgment and as such is another critical factor to the success of SMEs. SMEs need to be able to make honest recommendations to the group without being bound to the group or their superiors in any way (Fajardo, 2006). Any biases or conflicts of interest make the SME's work suspect. Granted, all the independence in the world will do nothing to save a project from SMEs with bad judgment, but even SMEs with good judgment will be less effective if they have to consider personal entanglements when making their recommendation.

One way to encourage independence, as well as to streamline the project, is to grant SMEs the authority to approve or deny plans based on their own expert judgment, without the approval of a supervisor or the approval of another team. Without this authority, the independence of SMEs will always be questionable (Fajardo, 2006). However, in most organizations this independence may not be practical, as it does not balance the plans with available budgets, other resources, and competing demands.

Availability

While availability does not address the quality of the SME, this factor is absolutely necessary to the quality of the project. Regardless of who is selected, the SME must be available to meet and work with the group on the project. Even the most qualified SMEs are devoid of value if they cannot attend meetings or otherwise properly contribute to the project. Potential SMEs should know that half the game is showing up; good ones will know to play the other half once they arrive (Pace, 2002).

Expertise vs. Advice

Opinions held by SMEs typically reflect what has been suggested in journals by other researchers on the topic (Bellarosa & Chen, 1997). Depending on how cynical one might care to be, this fact can indicate either that SMEs are well-read and agree with the leading theories in the literature, or that they simply "parrot" what they have read. Selected SMEs should possess a familiarity with the current situation and a background in similar situations, which, through

critical thinking and inference, they can draw upon to make better judgment calls in the current situation (Pace, 2002). An additional benefit of having properly qualified and well-informed SMEs is that they will be able to provide face validation to the outcomes or expected outcomes of the project until quantitative data become available (Pace).

However, opinions of SMEs are not necessarily the same as empirical findings or printed opinion and they should not be treated as such. Employers would do well to be cautious when applying SME opinions to practice. One needs to keep in mind all the potential caveats to SMEs' opinion. When SMEs are called upon to give face validation, or do anything more than rehash what is already available in the literature, SME opinions should be cautiously considered. Because opinions do not contain the same sort of controls or tests as empirical data, they are less reliable (Bellarosa & Chen, 1997).

Finding and Selecting the SME

When conducting a candidate search, consider the requirements and desired outcomes. If the goal is to complete a project, then seek people familiar with those for whom the project is intended, customers, and manufacturers, those with vested interests in the project (Pace, 2002). Good SMEs are able to represent those persons or groups in the community who have a vested interest in the project. If looking for a communicator, determine how well candidates project confidence and authority and how adept they are in responding to unscripted questions. Additionally, consider recommendations from knowledgeable sources, like professional associations or previous clients. Whatever the desired outcome, SMEs need to closely match the requirements, or have knowledge of where one can access those resources.

The best SMEs make themselves available via self-nomination. While one may be wary of self-nominated individuals at first, checking out their credentials, references, and performance reviews should help you to differentiate between those people who volunteer out of a genuine knowledge of and interest in the subject, and those who want to list that they were the SME for such and such on their curriculum vitae (Pace, 2002). To simplify the process, consider developing an SME nomination form with space for contact information, qualifications, experience, availability, and other information (Pace).

Validating the SME

The need to distinguish between SMEs and everyone else is the impetus for the requirement that the candidate possess recognized competence. A good way to check for recognized competence is to ask yourself who the SMEs are and why they were recommended. SMEs come with the recommendation of their peers and managers or previous clients. Are these recommendations based on years of experience or demonstrated excellence, or do the SMEs simply have too much time and not enough work? What kind of formal qualifications do the SMEs possess? Are these qualifications apropos for the task to which SMEs have applied? Are references or performance appraisals reflective of SMEs' abilities (Fajardo, 2006)? Expertise is further evidenced by academic degrees, experience in relevant professions, and significant publications or accomplishments (Pace, 2002).

Once a list of SME candidates is developed, look for an SME that is competent and able to communicate the information that he or she possesses clearly to the members of your group (Pace, 2002). The SME should be able to identify and state the interest, motives, and objectives of the stakeholders. For projects, that may mean the ability to define business needs and test requirements and functionality for your product (Fajardo, 2006). The SME will be able to do this alone. However, if these considerations are already drawn up, they should be made available to the SME to avoid confusion. What is needed is someone who is not only an expert in their field, but someone who can act as a trainer and approver for the project, bringing people

up to date on the project and then approving their contributions (Fajardo).

If all goes well with the selection process, the SME should be able to provide information based on firsthand knowledge and experience in the area. The SME "testimony" should be timely, providing insight into the real world as it exists today. Information provided will be relevant to the project at hand, rather than extraneous information from the same general field. As a result, the SME's testimony will be credible (Pace, 2002).

An SME can act as an advisor, coach, trainer, reviewer, approver, or knowledge revealer. A true SME should be an opinion leader in the field, whom others seek out for advice (Kilo, 2006). The SME's intimate knowledge of the subject and clear communication skills should have earned him the trust of others in the organization (Kilo).

Problems

Even if the SME possesses all of the qualities that employers look for when hiring their experts, some problems may still exist by using SMEs. For one, they are not subject to the contradiction or scrutiny from opposing experts as they are in the legal tradition (Pace, 2002). For another, despite their seeming independence, they could have a hidden agenda, be it financial, political, or personal (Pace). On a less malicious and more common level, the SME may have difficulty assessing the program relative to its intended application (Pace). The impact of perspective problems can be minimized by very clearly explaining just what the project is, target audience and what it is to be used for, at the introduction of the SME. Additionally, if SMEs do not have clear guidelines for what is expected from him or her, writing recommendation based on misconceptions or performance problems like being slow or late with work can develop.

Similarly, problems could occur due to negative perceptions of the SME within the group. Other members of the group could dislike SMEs for illogical reasons; SMEs may seem to be too close to persons in charge, outsiders, or bullies imposed upon the group by higher administration. Depending on the circumstance, the recommendations of SMEs who are perceived improperly can carry far more or less weight than is proper (Pace, 2002).

Exemplar

The best model of this kind of activity is that of SMEs as teachers, sharing their knowledge of the subject with students and then identifying which answers are correct (Anderson, Rourke, Garrison, & Archer, 2001). "Teacher" SMEs will direct instructional meetings about the project. In these meetings SMEs will facilitate learning by interjecting comments where they know a fact that the group would not. In order to increase the group's knowledge in general, or to aid in researching a specific aspect of the project, SMEs can refer the other members of the group to information resources. SMEs can also organize activities in such a way that the other members of the group construct content in their own minds through personal contexts, rather than giving them cut and dried facts to memorize (Anderson, 2004). This method of instruction has a two-part advantage. First, through the use of analogy, other members of the group will internalize the information better by making connections to their own lives and experiences; and, second, this method of instruction encourages other members of the group to think about the problem or information in new and different ways. Each person at the table will come away with a slightly different perspective on how the information fits into the world. This kind of diversity can aid in coming up with novel solutions, especially when multiple solutions of this nature are combined through the coordinated collaborative effort of the group. Finally, the "teacher" SME will provide instruction by "scaffolding" additional knowledge onto the learner's base (Anderson et al.).

Evaluation

Once requirements are complete, one can evaluate the SME's contributions by looking at a few aspects of their product. What feedback was received? If utilized to complete a project, the result of using a true SME should be a noticeable reduction in the cost and development time (Pace, 2002). If fact finding or research was conducted, did SMEs make their qualifications available along with the findings and conclusions? With regard to those conclusions, did SMEs specify what techniques were used and were any caveats about the findings listed clearly and explicitly in the text of the product? Was all testimony based on reliable facts, data, principles, and methods, up to the same standards expected for scholarly journal articles (Pace)?

Conclusion

Subject matter experts can be valuable resources. They can provide needed expertise when knowledge is absent. Through coaching and training, they can create talent where it does not yet exist. They can speed a project along, keep it on the right track, and quickly put out any fires that pop up in the project along the way. The only major concern with using an SME is also the most basic. Is your SME actually an expert? Remember, with SMEs as with firemen, if one uses an impostor, one is going to get burned.

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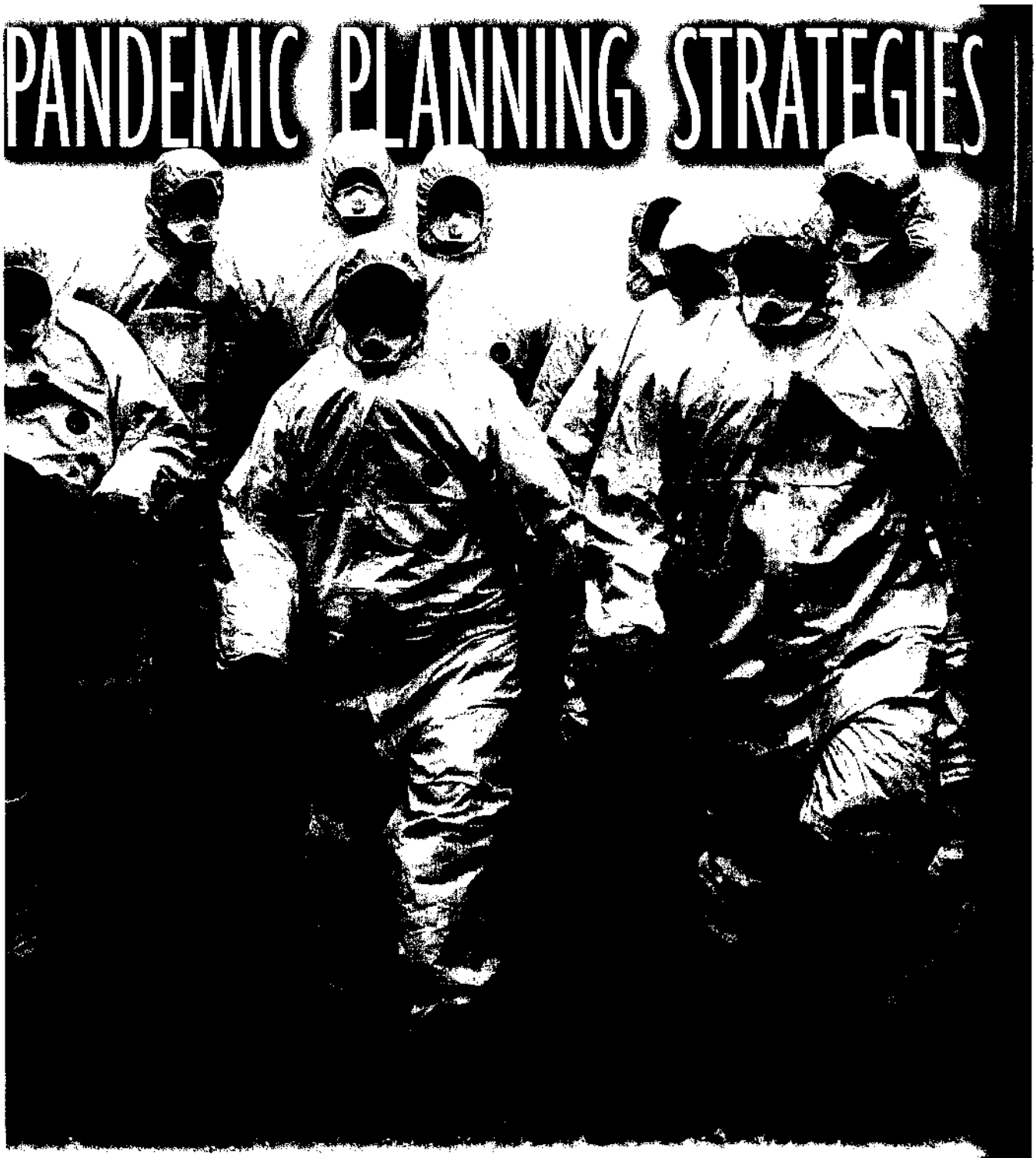
PANDEMIC PLANNING STRATEGIES



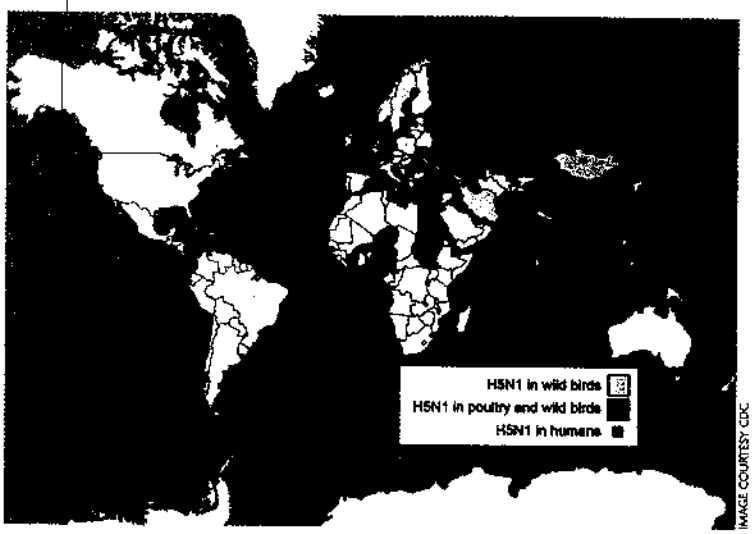
>> BY ROBERT POWERS, RN, BS, EMT-P, & CAPT. LYNN A. SLEPSKI, RN, MSN, CCNS

OW YOUR AGENCY SHOULD PREPARE TO DEAL WITH PANDEMIC EVENTS

It's the middle of the night, and you're stepping into your rig to head out on a call. It seems like any other time in your EMS career, but as you rub the sleep from your eyes, you remember it isn't. Your community, and the nation, is entering the fifth week of a pandemic flu. Business is far from usual.

Your department is working with only 60% of its staff. Some are at home taking care of their sick families, but most are ill themselves. Your partner was one of a handful of deaths so far within your department. Your current driver is a community volunteer who attended a hastily compiled emergency vehicle operations class last week.

Left: German soldiers collect dead birds in February 2006 on the island of Ummanz. The number of cases of avian flu in Germany rose to 103 that month.



Above: This map from the CDC shows the nations with confirmed cases of avian flu (H5N1) as of February 2007.

You reach for your N-95 mask and remember you don't have one anymore. Your department ran out a week ago after initially receiving a limited number of supplies from state stockpiles. Your normal supplier stopped delivering a week into the event. You put on the surgical mask you've been using for the past several days.

After being unable to get a decision from local and state officials on whether it was legal and ethical to suspend EMS operations because of the lack of proper personal protective equipment (PPE), your agency decided to deploy only those willing to volunteer to continue working.

Dispatchers are screening all calls to determine whether or not to send an ambulance. Hospitals are overflowing, and you've ceased transporting non-critical patients. Pandemic flu patients are going to special alternate care facilities (ACFs). With EMS supplies almost gone and hospitals without spare ventilators, field cardiac arrests are now limited to defibrillation and an initial round of medications; local officials are locked in debate over whether to work them at all.

THE NEED FOR PANDEMIC PREPARATION

Experts say the risk of an influenza pandemic is great—it's not if, but when, a pandemic will occur. Proper planning strategies for a flu pandemic are mandatory to achieve the greatest good for the greatest number of patients. EMS leaders will have to plan and make adjustments in their system to maintain service to the community because EMS is a critical infrastructure that must remain in operation. Without sufficient planning and established protocols in place prior to any event, EMS systems may fail their communities in their time of greatest need.

STAFFING

During a flu pandemic, some EMS personnel won't report to work. They'll be sick, just like the general public. They'll have sick families they need to take care of, and some will choose to stay away from work out of fear.

Along with the public, sick EMS workers will be isolated until they are no longer contagious, and providers exposed to an ill patient will be quarantined for twice the incubation period, i.e., eight to 10 days. Additionally, schools and daycare centers will be closed. This will create another dilemma for EMS workers who are trying to get care for

>> CONTINUED FROM PAGE 47

their children in order to go to work.

Estimates put the absentee rate at 30–50% of the EMS workforce, the same as the expected national rate.[1] This lack of staffing will place an additional burden on those EMS personnel who *are* able to work. Services without other options in place will expect these workers to staff longer shifts with little or no downtime.

To prevent significant psychological stress on these EMS workers, systems must be implemented to ensure an adequate rotation of staff. Even with adequate rotation, mental health support must be available. Ideally, each offgoing shift should meet with mental health staff before being released from work. In addition, personnel need specific training directly related to the pandemic event so they know what they're dealing with and what measures are in place to protect them.

Other strategies to increase and maintain your workforce include identifying and training non-medical personnel. This step may involve the reallocation of firefighters to ambulances in a combined service, or an agreement between agencies that allows for the temporary loan of employees during a pandemic event, such as parks department or other city employees who can be diverted from their normal work functions to drive ambulances or provide other support functions.

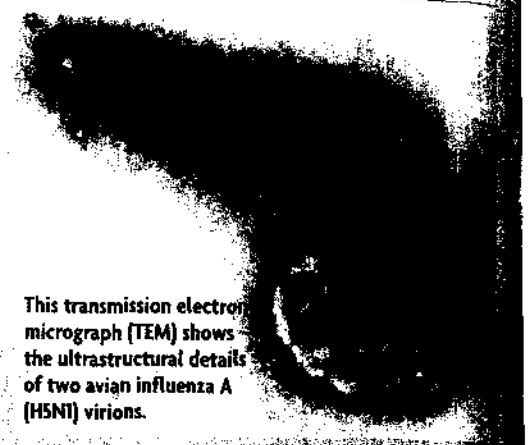
Retired or former EMS personnel can also be reintegrated into the service. Nontraditional resources could include drivers obtained from private industry or simply volunteers from the general public who complete "just in time" training on emergency vehicle operation.

Based on the magnitude of the pandemic, resources may need to be pulled from other states, as occurred during Hurricane Katrina in 2005. This will involve waiving the usual requirements for EMS personnel to work in the involved state, including application and testing for state certification. In a pandemic event, states will be forced to use legislation, such as the Emergency Powers Act, to provide immediate reciprocity or suspend certification requirements. These emergency measures must be developed, agreed upon and in place before the event occurs, carefully considering both the risks and the benefits to ensure adequate protection of the public.

These changes in state requirements

FLU 101

Along with the general public, many EMS providers are confused about influenza, better known as "the flu." The influenza virus has several strains, and two—avian influenza and pandemic influenza—are making news, while the "normal," or endemic flu, continues to kill an estimated 36,000 people in the U. S. every year.[1] That estimate may even be low, because until recently influenza hasn't been a disease tracked by the CDC and state health departments.



This transmission electron micrograph (TEM) shows the ultrastructural details of two avian influenza A (H5N1) virions.

Humans can be infected with types A, B and C of the influenza virus. Depending on scientific estimation of which strains of viruses will be prevalent, seasonal flu vaccines are developed that contain three types of the virus—two of the type A viruses (H3N2 and H1N1) and one type B virus.[2] (Type C viruses produce only mild disease that they aren't included in vaccines.)

The "H" and "N" in the virus name describe the proteins on the surface of the influenza virus. There are 16 "H" markers (H1–H16) and nine "N" markers (N1–N9).[3] To understand how these protein markers are involved in a pandemic, we must first understand the "shifts" and "drifts" of viral strains.

Picture the virus as a bank robber who always wears jeans, a white windbreaker and a white ski mask. The vaccine is like an all-points bulletin with a picture of the bank robber. Even if the bank robber wears a different brand of jeans or a different team logo on his cap, a security guard (a vaccine-boosted immune system) can still easily recognize him. These subtle changes are analogous to what happens with the flu virus from year to year. This is called "antigenic drift."

Additionally, three or four times a century, the Hs and/or Ns of a virus shuffle to create a new look. This is known as "antigen shift." For example, from 1957–1967, the predominant virus was H2N2. In 1967, the predominant virus shifted from H2N2 to H3N2. Our bank robber kept his blue jeans and white ski mask but changed to a red windbreaker and snuck right past the bank guard, who didn't know about the new look. Thus, the vaccine disseminated in 1967 didn't prepare people's immune systems to recognize and fight the new H3N2 virus, and a worldwide pandemic ensued.

The avian flu virus, H5N1, is a strain of the influenza type A virus. It has been documented that when a human is infected with this virus from a bird, it's extremely deadly and kills more than 50% of those infected. The current concern is whether the avian flu virus will mutate to allow easy transmission from human to human.

At present, medical researchers are actively seeking a vaccine effective against H5N1 in humans. Vaccines developed by Sanofi Pasteur and Chiron have been in trials since 2004. Several different groups and dosages are under study to determine vaccine safety and efficacy.

Efforts are also underway to devise a new vaccine that does not rely on the HA protein (which is used in the current vaccine) but on the M2 protein marker (which doesn't change frequently) to identify the offending virus. Researchers hope to, in the future, produce longer lasting vaccines and eliminate the need for annual flu vaccinations.

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BRIEF SUMMARY OF PRESCRIBING INFORMATION

INDICATIONS AND USAGE: Cyanokit is indicated for the treatment of known or suspected cyanide poisoning. **Identifying Patients with Cyanide Poisoning:** Cyanide poisoning may result from inhalation, ingestion, or dermal exposure to various cyanide-containing compounds, including smoke from closed-space fires. Sources of cyanide poisoning include hydrogen cyanide and its salts, cyanogenic plants, aliphatic nitriles, and prolonged exposure to sodium nitroprusside. The presence and extent of cyanide poisoning are often initially unknown. There is no widely available, rapid, confirmatory cyanide blood test. Treatment decisions must be made on the basis of clinical history and signs and symptoms of cyanide intoxication. If clinical suspicion of cyanide poisoning is high, Cyanokit should be administered without delay. In some settings, panic symptoms including tachypnea and vomiting may mimic early cyanide poisoning signs. The presence of altered mental status (e.g., confusion and disorientation) and/or mydriasis is suggestive of true cyanide poisoning although these signs can occur with other toxic exposures as well. The expert advice of a regional poison control center may be obtained by calling 1-800-222-1222. Smoke Inhalation: Not all smoke inhalation victims will have cyanide poisoning and may present with burns, trauma, and exposure to other toxic substances making a diagnosis of cyanide poisoning particularly difficult. Prior to administration of Cyanokit, smoke-inhalation victims should be assessed for the following: exposure to fire or smoke in an enclosed area; presence of soot around the mouth, nose or oropharynx; altered mental status. Although hypotension is highly suggestive of cyanide poisoning, it is only present in a small percentage of cyanide-poisoned smoke inhalation victims. Also indicative of cyanide poisoning is a plasma lactate concentration ≥10 mmol/L (a value higher than that typically listed in the table of signs and symptoms of isolated cyanide poisoning because carbon monoxide associated with smoke inhalation also contributes to lactic acidemia). If cyanide poisoning is suspected, treatment should not be delayed to obtain a plasma lactate concentration. **Use with Other Cyanide Antidotes:** Caution should be exercised when administering other cyanide antidotes simultaneously with Cyanokit, as the safety of co-administration has not been established. If a decision is made to administer another cyanide antidote with Cyanokit, these drugs should not be administered concurrently in the same IV line.

Table 1 Common signs and Symptoms of Cyanide Poisoning

Symptoms	Signs
• Headache • Confusion • Dyspnea • Chest tightness • Nausea	• Altered Mental Status (e.g., confusion, disorientation) • Seizures or Coma • Mydriasis • Tachypnea / Hyperpnea (early) • Bradypnea / Apnea (late) • Hypertension (early) / Hypotension (late) • Cardiovascular collapse • Vomiting • Plasma lactate concentration ≥8 mmol/L

CONTRAINDICATIONS: None.

WARNINGS AND PRECAUTIONS: Emergency Patient Management: In addition to Cyanokit, treatment of cyanide poisoning must include immediate attention to airway patency, adequacy of oxygenation and hydration, cardiovascular support, and management of any seizure activity. Consideration should be given to decontamination measures based on the route of exposure. **Allergic Reactions:** Use caution in the management of patients with known anaphylactic reactions to hydroxocobalamin or cyanocobalamin. Consideration should be given to use of alternative therapies, if available. Allergic reactions may include: anaphylaxis, chest tightness, edema, urticaria, pruritus, dyspnea, and rash. Allergic reactions including angioneurotic edema have also been reported in postmarketing experience. **Blood Pressure Increase:** Many patients with cyanide poisoning will be hypotensive; however, elevations in blood pressure have also been observed in known or suspected cyanide poisoning victims. Elevations in blood pressure (≥180 mmHg systolic or ≥110 mmHg diastolic) were observed in approximately 18% of healthy subjects (not exposed to cyanide) receiving hydroxocobalamin 5 g and 28% of subjects receiving 10 g. Increases in blood pressure were noted shortly after the infusions were started; the maximal increase in blood pressure was observed toward the end of the infusion. These elevations were generally transient and returned to baseline levels within 4 hours of dosing. **Use of Blood Cyanide Assay:** While determination of blood cyanide concentration is not required for management of cyanide poisoning and should not delay treatment with Cyanokit, collecting a pretreatment blood sample may be useful for documenting cyanide poisoning as sampling post-Cyanokit use may be inaccurate.

Table 2 Laboratory Interference Observed with *In-Vitro* Samples of Hydroxocobalamin

Laboratory Parameter	No Interference Observed	Artificially Increased *	Artificially Decreased *	Unpredictable	Duration of Interference
Clinical Chemistry	Calcium Sodium Potassium Chloride Urea GGT	Creatinine Bilirubin Triglycerides Cholesterol Total protein Glucose Albumin Alkaline phosphatase	ALT Amylase	Phosphate Uric Acid AST CK CKMB LDH	24 hours with the exception of bilirubin (up to 4 days)
Hematology	Erythrocytes Hematocrit MCV Leukocytes Lymphocytes Monocytes Eosinophils Neutrophils Platelets	Hemoglobin MCH MCHC Basophils			12 - 16 hours
Coagulation				aPTT PT (Quick or INR)	24 - 48 hours
Urinalysis		pH (with all doses) Glucose Protein erythrocytes Leukocytes Ketones Bilirubin Urobilinogen Nitrite	pH (with equivalent doses of <5 g)		48 hours up to 8 days; color changes may persist up to 28 days

* ≥ 10% interference observed on at least 1 analyzer

Interference with Clinical Laboratory Evaluations: Because of its deep red color, hydroxocobalamin has been found to interfere with colorimetric determination of certain laboratory parameters (e.g., clinical chemistry, hematology, coagulation, and urine parameters). *In-vitro* tests indicated that the extent and duration of the interference are dependent on numerous factors such as the dose of hydroxocobalamin, analyte, methodology, analyzer, hydroxocobalamin concentration, and partially on the time between sampling and measurement. Based on in-vitro studies and pharmacokinetic data obtained in healthy volunteers, the above table (Table 2) describes laboratory interference that may be observed following a 5 g dose of hydroxocobalamin. Interference following a 10 g dose can be expected to last up to an additional 24 hours. The extent and duration of interference in cyanide-poisoned patients may differ. Results may vary substantially from one analyzer to another; therefore, caution should be used when reporting and interpreting laboratory results. Analyzers used: ACL Futura (Instrumentation Laboratory), AxSYM®/Architect™ (Abbott), BM Cobas® (Boehringer Mannheim), CellDyn 3700® (Abbott), Clinitek® 500 (Bayer), Cobas Integra® 700, 400 (Roche), Gen-S Coultronics, Hitachi 917, STA® Compact, Vitros® 950 (Ortho Diagnostics). **Photosensitivity:** Hydroxocobalamin absorbs visible light in the UV spectrum. It therefore has potential to cause photosensitivity. While it is not known if the skin redness predisposes to photosensitivity, patients should be advised to avoid direct sun while their skin remains discolored. **ADVERSE REACTIONS:** Serious adverse reactions with hydroxocobalamin include allergic reactions and increases in blood pressure *[see Warnings and Precautions]*. **Clinical Studies Experience:** Because clinical trials were conducted under widely varying conditions, adverse reaction rates observed in the clinical trials may not reflect the rates observed in practice. Experience in Healthy Subjects: A double-blind, randomized, placebo-controlled, single-ascending-dose (2.5, 5, 7.5, and 10 g) study was conducted to assess the safety, tolerability, and pharmacokinetics of hydroxocobalamin in 136 healthy adult subjects. Because of the dark red color of hydroxocobalamin, the two most frequently occurring adverse reactions were chromaturia (red-colored urine) which was reported in all subjects receiving a 5 g dose or greater; and erythema (skin redness), which occurred in most subjects receiving a 5 g dose or greater. Adverse reactions reported in at least 5% of the 5 g dose group and corresponding rates in the 10 g and placebo groups are shown in Table 3. In this study, the following adverse reactions were reported to have occurred in a dose-dependent fashion and with greater frequency than observed in placebo-treated cohorts: increased blood pressure (particularly diastolic blood pressure), rash, nausea, headache and infusion site reactions. All were mild to moderate in severity and resolved spontaneously when the infusion was terminated or with standard supportive therapies. Other adverse reactions reported in this study and considered clinically relevant were: *eye disorders*: swelling, irritation, redness; *gastrointestinal disorders*: dysphagia, abdominal discomfort, vomiting, diarrhea, dyspepsia, hematochezia; *general disorders and administration site conditions*: peripheral edema, chest discomfort; *immune system disorders*: allergic reaction; *nervous system disorders*: memory impairment, dizziness; *psychiatric disorders*: restlessness; *respiratory, thoracic, and mediastinal disorders*: dyspnea, throat tightness, dry throat; *skin and subcutaneous tissue disorders*: urticaria, pruritus; *vascular disorders*: hot flush.

Table 3 Incidence of Adverse Reactions Occurring in >5% of Subjects in 5 g Dose Group and Corresponding Incidence in 10 g Dose Group and Placebo

	5 g Dose Group		10 g Dose Group	
ADR	Hydroxocobalamin N=66 n (%)	Placebo N=22 n (%)	Hydroxocobalamin N=18 n (%)	Placebo N=6 n (%)
Chromaturia (red colored urine)	66 (100)	0	18 (100)	0
Erythema	62 (94)	0	18 (100)	0
Rash*	13 (20)	0	8 (44)	0
Blood pressure increased	12 (18)	0	5 (28)	0
Nausea	4 (6)	1 (5)	2 (11)	0
Headache	4 (6)	1 (5)	6 (33)	0
Lymphocyte percent decreased	5 (8)	0	3 (17)	0
Infusion site reaction	4 (6)	0	7 (39)	0

* Rashes were predominantly acneiform

Experience in Known or Suspected Cyanide Poisoning Victims: Four open-label, uncontrolled, clinical studies (one of which was prospective and three of which were retrospective) were conducted in known or suspected cyanide-poisoning victims. A total of 245 patients received hydroxocobalamin treatment in these studies. Systematic collection of adverse events was not done in all of these studies and interpretation of causality is limited due to the lack of a control group and due to circumstances of administration (e.g., use in fire victims). Adverse reactions reported in these studies listed by system organ class included: *cardiac disorders*: ventricular extrasystoles; *investigations*: electrocardiogram repolarization abnormality, heart rate increased; *respiratory, thoracic, and mediastinal disorders*: pleural effusion. Adverse reactions common to both the studies in known or suspected cyanide poisoning victims and the study in healthy volunteers are listed in the healthy volunteer section only and are not duplicated in this list.

DRUG INTERACTIONS: No formal drug interaction studies have been conducted with Cyanokit.

USE IN SPECIFIC POPULATIONS: Pregnancy: Pregnancy Category C. Animal studies are insufficient with respect to effects on pregnancy and embryo-fetal development. There are no adequate and well-controlled studies in pregnant women. Cyanokit should be used during pregnancy only if the potential benefit justifies the potential risk to the fetus. In a clinical study of the safety of Cyanokit in healthy volunteers, a pregnant subject was inadvertently enrolled and administered 5 g of hydroxocobalamin IV during her fourth week of gestation. Her pregnancy was uneventful and she reported the birth of a normal healthy baby at term. In a retrospective study of cyanide ingestion/inhalation, a female subject, 4-months pregnant, ingested an undetermined amount of potassium cyanide. She received 10 g of hydroxocobalamin in addition to sodium thiosulfate in the first 24 hours post-ingestion. The fetus suffered intrauterine death, but it was suspected that this occurred prior to the ingestion of cyanide and administration of hydroxocobalamin. The mother survived without sequelae. **Labor and Delivery:** The effect of Cyanokit on labor and delivery is unknown. **Nursing Mothers:** It is not known whether hydroxocobalamin is excreted in human milk. However, because Cyanokit may be administered in life-threatening situations, breast-feeding is not a contraindication to its use. Because many drugs are excreted in human milk, caution should be exercised following hydroxocobalamin administration to a nursing woman. There are no data to determine when breastfeeding may be safely restarted following administration of hydroxocobalamin. **Pediatric Use:** Safety and effectiveness of Cyanokit have not been established in this population. In non-US marketing experience, a dose of 70 mg/kg has been used to treat pediatric patients. **Geriatric Use:** Approximately 50 known or suspected cyanide victims aged 65 or older received hydroxocobalamin in clinical studies. In general, the safety and effectiveness of hydroxocobalamin in these patients was similar to that of younger patients. No adjustment of dose is required in elderly patients. **Renal Impairment:** The safety and effectiveness of Cyanokit have not been studied in patients with renal impairment. Hydroxocobalamin and cyanocobalamin are eliminated unchanged by the kidneys. Oxalate crystals have been observed in the urine of both healthy subjects given hydroxocobalamin and patients treated with hydroxocobalamin following suspected cyanide poisoning. **Hepatic Impairment:** The safety and effectiveness of Cyanokit have not been studied in patients with hepatic impairment.

OVERDOSAGE: No data are available about overdose with Cyanokit in adults. Should overdose occur, treatment should be directed to the management of symptoms. Hemodialysis may be effective in such a circumstance, but is only indicated in the event of significant hydroxocobalamin-related toxicity.

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should also include plans at the state and local levels that would expand the standard scope of practice for EMTs and paramedics. With an expanded scope, your workforce could continue to function by allowing providers to perform more advanced skills.

During a pandemic, a paramedic might be able to administer medications not normally on a prehospital drug list but deemed essential to the health and welfare of the citizenry. Selected EMTs, with specific training, could increase their scope of practice and work a cardiac arrest under a defined protocol.

Estimates put the absentee rate of the EMS workforce at 30–50%. This will place an additional burden on those who *are* able to work.

ANTIVIRALS & VACCINES

As drug manufacturing capacities of antivirals increase, the potential use of antivirals as prophylaxis has gained attention. Some communities may choose to provide antivirals to members of critical infrastructure who have high exposure risks, and even to their families in some cases, in order to prevent infection and ultimately maintain a continuity of operations.

Likewise, the priority for a pandemic vaccine is also under discussion. Once a well-matched pandemic vaccine is available (approximately five to six months after the beginning of sustained, efficient human-to-human transmission), the limited supplies will be allocated based on the characteristics of the disease and the populations most affected. Critical infrastructure employees, such as EMS personnel, are carefully being considered in vaccine prioritization discussions at the national level.

SUPPLY ISSUES

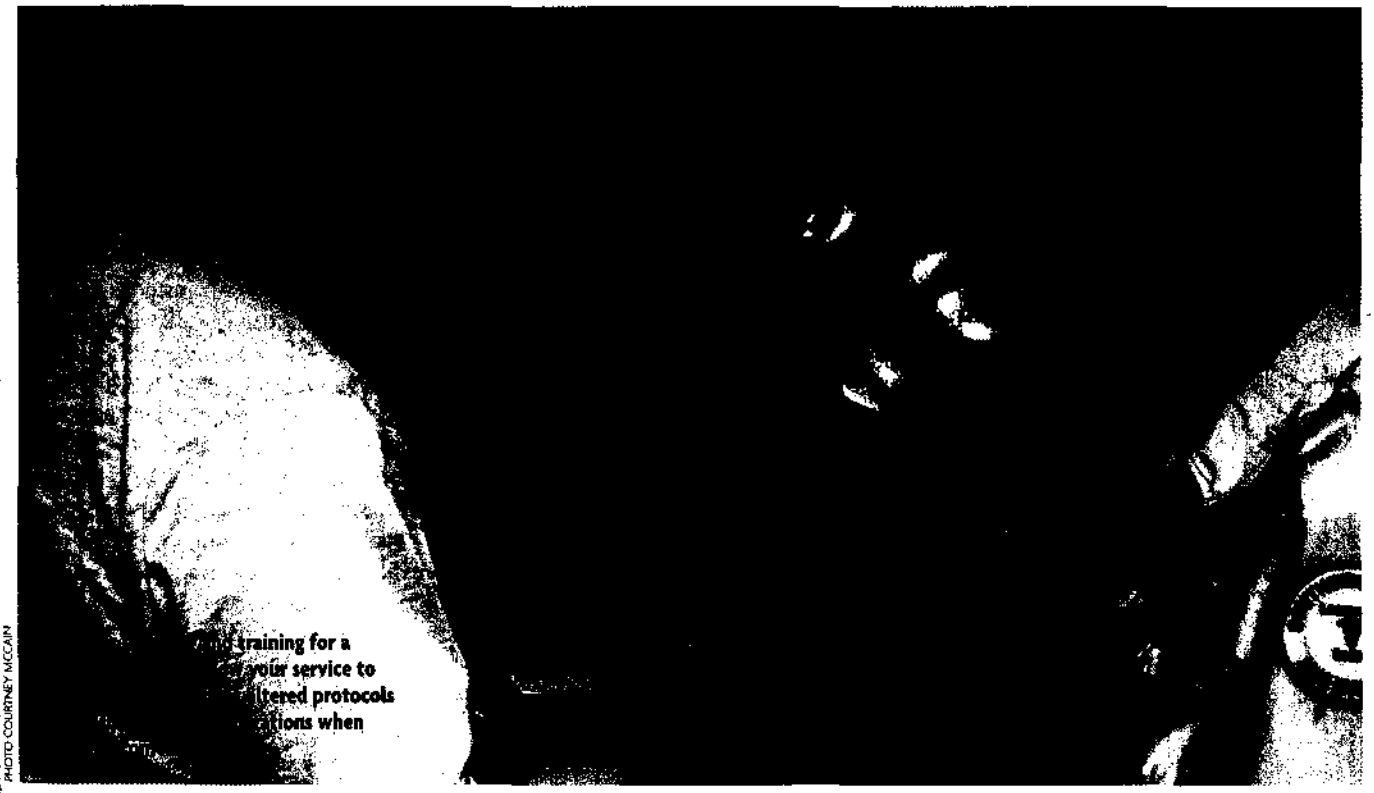
The Federal Strategic National Stockpile (SNS), along with state stockpiles, is currently working to establish supplies of PPE, such as N-95 masks, gowns and gloves. However, during a pandemic event, available supplies and resources will be spread thin. If supplies do arrive from outside sources, the quantities may be so few that they may not make a substantial difference to the local community.

EMS agencies may not be able to rely on their normal deliveries from suppliers, unless these companies have also developed robust pandemic plans in advance. Like EMS, these suppliers will have difficulty maintaining operations due to decreases in their workforce. Trouble getting gas or vehicle repairs will further decrease their ability to make deliveries.

Rationing of available supplies will affect every aspect of operations. So advanced planning must be coordinated and in place with local businesses that agree to provide services to EMS during pandemic conditions. A rig that runs out of gas with no fuel deliveries coming to the neighborhood or one that breaks down with no repair shop open is one fewer ambulance available to the community.

Local and county government officials may be able to negotiate with gas stations to close their businesses to the general public if fuel deliveries stop, and to keep their complete supply available for emergency vehicle use only.

Masks and other PPE will be needed on every call to protect staff and patients. This will result in shortages. Even if services are able to mimic the recommendation for hos-



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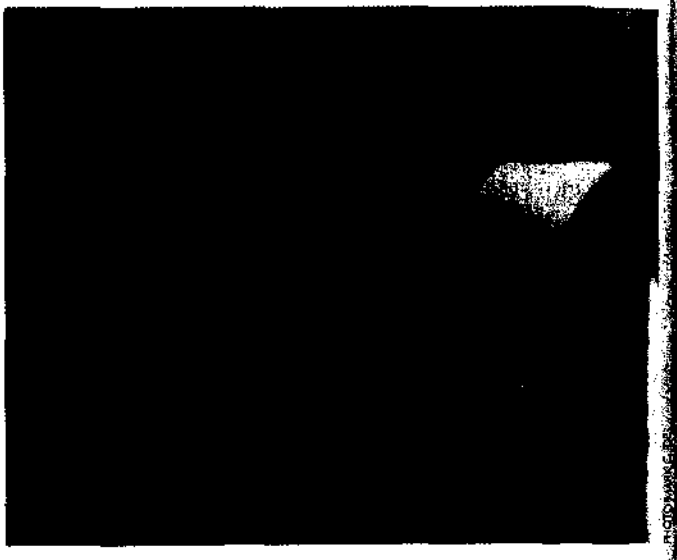
pitals to maintain eight weeks of PPE stockpiles, difficulties in calculating exact quantities needed, and rapid utilization during an event, will likely result in quick depletion of needed supplies.[2]

The Department of Health and Human Services (DHHS) doubts that even increasing the manufacturing of masks would allow stockpiles to meet the potential demand.[3] If proper PPE is not available to your crews, decisions will need to be made regarding the suspension of EMS services. Pre-event policies need to be worked out with local health departments to determine a community medical plan, ranging from not responding at all to continuing to run all calls, some of which may put EMS crews and patients at great risk.

Options to cope with the lack of N-95 masks are in development. The Institute of Medicine is studying whether N-95 masks can be modified for reuse.[3] The DHHS is also considering stockpiling standard surgical masks, even though they have limited value in controlling spread of an infection.[3] Researchers are also experimenting with other readily available resources to create improvised respiratory barriers. One effort under study is using layers of washable T-shirt material as a respiratory barrier.[4] None of these is a first choice, but when supplies disappear, backup plans must be in place.



Work with your regional disaster planning groups to develop altered protocols for transport, including the location of any ACFs that will be used.

ALTERED STANDARDS OF RESPONSE

Rationing supplies also involves rationing response, transport and care. In the face of an overwhelming number of patients and scarce resources, agencies could easily fail to maintain their ability to respond. Altered standards seek to maintain operations at a lower level than by adhering to the disaster goal of doing "the greatest good for the greatest number of people." However, these types of discussions must take place before the event to ensure everyone is in agreement with the decisions made and that adherence to legalities is being properly maintained.

Triage is the well-established process of allocating limited resources to those with the most immediate need. Ambulances themselves would be a limited resource in a pandemic event due to increased call volume and lack of supplies, fuel, staff and operational

support. Therefore, ambulance triage would need to be established to determine which 9-1-1 callers receive an ambulance.

Ambulance triage would allow those limited EMS resources to be prioritized to the varying needs of the community. This process would be dependent on advanced planning to establish the parameters for ambulance response and firmly anchor those protocols into legal and ethical standards.

An EMS specialist or public health staff member at the 9-1-1 center would also not only determine whether an ambulance was to be dispatched, but also the availability of beds for patients at hospitals or ACFs. Many infected patients would be kept in their homes and not sent to the hospitals or ACFs until their condition became critical.

If all available beds and ventilators are tied up, many patients may not even be transported. EMS may potentially be dispatched to intubate these patients and teach family members or volunteers to handbag such patients until a ventilator becomes available.

ALTERED STANDARDS OF TRANSPORT

During a pandemic event, EMS crews will also need to use pre-established criteria to determine whether transport is necessary. With hospitals overflowing, EMS cannot transport minor complaints.

During a pandemic, transport will be provided for patients with certain categories of complaints. However, EMS might not transport these patients to hospitals but rather to alternate screening sites or private doctors' offices. The care offered at an alternate site will not be the same as would be offered at a pre-pandemic flu emergency department (ED), and it may consist of only baseline physician assessments. EMTs may be asked to contact these doctors directly from the scene, relay patient assessment information and carry out requested orders in the home. Criteria for this type of potential response should be built into an EMS agency's pandemic plan ahead of time.

If transport is necessary during a pandemic, EMS may be asked to take patients to sites other than EDs. With hospitals and health departments establishing ACFs for the large volume of infected patients that overflowing hospitals can't handle, EMS will be tasked with transporting directly to an ACF.

For this process, EMS may use pre-established flu trucks that specifically deal with the transport of patients known or suspected to be infected. These specially designated vehicles would limit the potential exposure of staff, contamination of the vehicle fleet and use of scarce PPE. Other alterations in normal transport include transporting several flu patients at the same time and utilizing mass transportation, such as buses and vans.

During the development of altered transport standards, EMS must be involved in their community and regional local disaster planning process in order to be aware of and provide input to any changes in locations where patients will be housed. Involvement will enable EMS to strategically plan for alterations and ensure effective operations during a pandemic.

ALTERED STANDARDS OF CARE

Hospitals are working to develop altered standards of care for a ventilator triage process. The U.S. hospital system has 105,000 ventilators. However, the potential need for ventilators during a severe pandemic event is estimated at more than 742,500.[5] The SNS is estimated to

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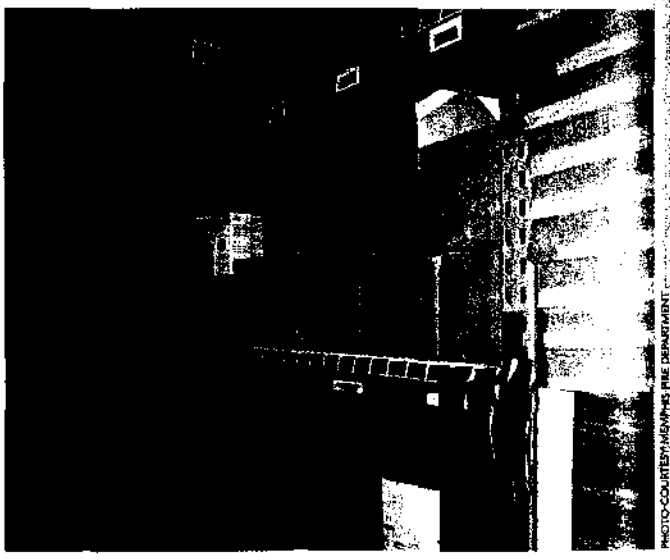
have 4,000–5,000 ventilators—not enough to help if the shortages are widespread. A standardized ventilator triage process would guide physicians in determining which patients get the scarce machines and provide a legal framework that would help protect physicians during any post-event legal inquiries.

To develop altered standards of EMS care, agencies will first need to evaluate its level of resuscitative treatment for pre-hospital cardiac arrests. With limited supplies to run codes and limited hospital beds or ventilators available if a patient is resuscitated, local medical directors will have to enforce altered standards of care that may involve limiting code efforts to CPR, defibrillation and perhaps a first round of medications or, potentially, not working any cardiac arrests at all. Unresponsive patients would be left at their homes for transport to temporary morgue facilities.

During a pandemic, hospitals may place patients who would normally be in a hospital ward bed, back in their homes. These patients could place an additional strain on EMS, with crews being asked to conduct house calls and perform IV maintenance, IV and medication infusions, and dressing changes.

In addition, health departments may implement home isolation or quarantine for patients who aren't critical enough for the limited hospital beds; the increased needs of these homebound patients could create yet another strain on the EMS system.



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Shortages of masks and other PPE will be evident early in a pandemic as resources are spread thin. Establish a stockpile to lessen this effect.

To properly address concerns of negligence or liability, these issues must be planned for well in advance of a pandemic event. State and local governments must identify who is authorized to execute altered standards of care. This person, potentially local EMS medical directors, would have the authority to determine the changes necessary in established protocols to provide some level of care to the general public.

REGIONAL RESPONSE

Disaster planning has typically focused on regional response allocation, which coordinates support from neighboring resources. If one community is hit harder than the other, support comes from neighboring communities.

KEY RESOURCES

>> **National Strategy for Pandemic Influenza**
www.whitehouse.gov/homeland/pandemic-influenza.html

>> **Centers for Disease Control and Prevention**
www.cdc.gov/flu

>> **World Health Organization**
www.who.int/topics/avian_influenza/en/

>> **American Red Cross** www.redcross.org/news/ds/panflu/

>> **Public Broadcasting Service Boston**
www.pbs.org/wgbh/amex/influenza/sfeature/trackers.html

Regional medical support consists of hospital staff and supplies, such as ventilators. EMS agencies need pre-existing regional response agreements that will allow them to send staff, ambulances and supplies to more populated or more heavily impacted areas.

As stated earlier, credentialing issues must be dealt with on a state level pre-event so that available personnel from other states won't have to spend time working out problems with reciprocity instead of taking care of patients. During a disaster, Colorado legislation allows EMTs to work under the license of any physician rather than their normal requirement of allowing them to work under licenses of physicians with prior agreements only, in addition to granting EMTs immunity for their good faith actions.[6]

Regionally, ambulances will also be needed to redistribute patients away from heavily impacted areas. With EMS already taxed to their limit because of local community needs, this redistribution will call for additional ambulances, which may exceed the number they can provide.

The relocation of patients to lesser impacted areas must be a top priority for EMS. By moving these patients beyond the boundaries of the heavily impacted area, needed hospital space and ventilators will be opened up for the next round of patients.

Even though a severe pandemic event may impact all areas of a region, there will still be areas of greatest impact. Pre-event regional planning will help allocate ambulances to these areas during an event and ensure that all the necessary issues, e.g., written agreements, credentialing, salaries and worker's compensation, are addressed well in advance.

TRAINING & COMMUNICATION

Pandemic-specific training of EMS personnel must occur before an event. Staff must also be kept informed of every phase of a developing pandemic event, including education of their altered role and the necessary PPE requirements. Proper education will allow staff to feel more comfortable about their protection, and they will be more likely to show up for work.

In addition to communicating with staff, plans must be in place for communicating with the public in a timely and appropriate manner. The public should be informed and involved early in your pandemic planning process so they can offer input into decisions regarding altered standards of care. A joint effort by local EMS agencies, emergency management and public health should involve and inform the public of potential changes through town meetings or public information spots. The public should know in advance how they will receive

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updated information and from which local authority. The public should also be provided with clear information through the media regarding changes in response or care.

CONCLUSION

Pre-planning strategies to operate during a pandemic flu outbreak is imperative for EMS agencies. Prehospital leaders will have to plan and make adjustments in their normal operations to maintain service and provide care to the community in its time of greatest need. Failing the community because of poor planning is inexcusable. EMS is a critical infrastructure that must maintain its ability to function, even at a reduced level and with significant alterations, during a pandemic event. JEMS

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The views expressed here are those of the authors and do not represent the official policy or position of the Department of Homeland Security, the Uniformed Services University of the Health Sciences or the United States Government.

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Radiation Incidents and Emergency Preparedness

Author: Cmdr. Lynn Slepski, RN, MSN, CCNS

APN

Course Objectives

The goal of this program is to provide information to nurses about radiological contamination and medical care following an incident involving radiation sources. After studying the information presented here, you will be able to —

- Explain the basic principles of radiation and possible scenarios for radiological incidents.
- Discuss the injuries, radiological contamination routes, presenting signs and symptoms, and treatments associated with radiological incidents.
- Discuss the basic roles and responsibilities of nurses in responding to a radiological mass casualty (MASCAL) incident.
- Name additional resources that nurses can call on to learn more.

We know that terrorists will use any means to gain attention, cause harm, and disrupt the lives of the American people. Radiation emergencies are one of the least understood and emphasized segments of health provider education and therefore one of the most frightening.[1] You can't see, smell, or touch radiation.[2] Most health workers feel unprepared to deal with radiological incidents. We know that a mass casualty (MASCAL) incident resulting from radiation is likely to generate large numbers of frightened people, or "worried well," who may or may not require decontamination.[3,4]

Radiation 101

Radiation is energy that can be characterized as waves or particles trying to become stable. Radioactive materials contain energized atoms that are unstable and release energy. This energy may damage certain critical cellular structures, causing a cell to malfunction or die and may also interact with water molecules in the body to create unstable, hyperoxide molecules, causing further damage. (See the table on the next page for characteristics of ionizing radiation.)

Every year, people worldwide are exposed to naturally occurring background radiation from the sun, outer space, and radioactive materials in the soil. The average U.S. resident receives a background radiation dose from all sources of about 100 millirems.[6] Man-made sources of radiation include some industrial measurement devices and radiotherapeutics used for medical diagnoses and treatment. Sources of radioactive materials include nuclear power plants, nuclear waste processors, university research centers, medical radiotherapy clinics, and even industrial complexes.[1]

The Gray (Gy) is a unit of measure for absorbed dose and reflects the amount of energy deposited into a mass of tissue (1 Gy = 100 rads). The U.S. annual occupational exposure allowed by the Department of Energy for those who work with and around radioactive materials is 0.05 Gy [1] (or 15,000 millirems).[6]

Weapons of mass destruction

There are four general scenarios you consider when classifying radiological weapons of mass destruction (WMD).[7] The four scenarios are examined here in order of least likely to occur to more likely to occur.

Nuclear bombs or improvised nuclear devices (IND), also known as suitcase nukes, require high-grade radioactive fissionable materials and the scientific and technical sophistication to assemble the components for detonation. Nuclear devices create a tremendous blast, extreme heat, and a significant dose of radiation to those in close proximity (two miles for an IND and more than 50 miles for a 1 kiloton nuclear bomb).[1,8] The purchase

and transportation of fissionable materials are highly regulated in most countries, which significantly limits their availability. This type of event is extremely unlikely.

In the history of the nuclear power industry, industrial accidents involving nuclear power plants have been rare. Nuclear plants have a number of redundant safety systems to take a plant off-line as well as well-exercised emergency plans involving local authorities (police, fire, and EMS). Their physical structures have been bolstered to prevent accidental releases, even from a terrorist attack.

There have been a few reports of hidden or "silent" sources, defined as radioactive sources that are lost or abandoned, or intentionally placed in areas to expose people. By placing a source on mass transportation, such as under a subway seat, or in a large movie theater, large numbers of casualties could occur over time.

Finally, radiological dispersion devices, or dirty bombs, combine an ordinary explosive with a radioactive material. Although there has been no documented use to date, it is believed that a dirty bomb could be constructed with radiologic materials found in common use. Materials like Cesium 137 and Cobalt 60, frequently found in medical teletherapy, and Iridium 192, found in industrial instrumentation, can be purchased legitimately or illegitimately, or stolen.[1,2]

While it is unlikely that a dirty bomb would cause large numbers of actual radiation casualties, detonation of one would likely result in panic and economic disruption.[2]

How radiation affects the body

Exposure occurs when all or part of the body is exposed to penetrating radiation. We subject patients to exposures every day when we perform a CT scan or an X-ray. The radiation is either absorbed or passes completely through. Once removed from the source, the patient is not radioactive and can be treated like any other patient.[5,7,9]

Contamination is radioactive material where it does not belong. It can be a solid, liquid, or gas or even dust particles that float through the air and eventually settle on the ground or some other surface. External contamination is radioactive material on the outside of the body, usually on the skin or on clothing. It can be easily removed by removing clothing and washing the skin with soap and water. Internal contamination involves the deposition of radioactive material inside the body through inhalation, ingestion, or penetrating wounds.[5,7]

Incorporation is the uptake of radioactive materials by body cells, tissues, and target organs such as bone, the liver, the thyroid, or the kidney, causing chemical changes at the cellular level. Incorporation cannot take place unless contamination occurs.[5] Cells that replicate rapidly, such as spermatocytes, blood elements, and intestinal crypt cells, are very sensitive. Lymph tissue and bone marrow are the most radiation-sensitive tissues. The most radiation sensitive organs are the skin, intestines, kidneys, and gonads.[6,9]

Radiation can affect the body in a number of ways, and harmful health consequences may not be seen for many years.[7] Effects depend on the amount of radiation absorbed by the body (the dose), the type of radiation, the route of exposures, and the length of time a person is exposed. Effects can be mild, such as reddening of the skin, or serious, such as cancer and even death.[10] Special populations that are more radiation-sensitive include those under 12 years and pregnant women because of their rapidly growing tissues, those over the age of 60 because of declining immune systems and co-morbidities, and those with pre-existing conditions that may result in immunosuppression, blood loss, or infectious complications. The human embryo and fetus are particularly sensitive to ionizing radiation, and the health consequences of exposure can be severe, even at radiation doses too low to immediately affect the mother. Consequences can include growth retardation, malformations, impaired brain function, and cancer. At higher doses, the health effects depend on dose and the stage of gestation.[9,11]

Nursing considerations

The Joint Commission on Accreditation of Healthcare Organizations requires facilities it accredits to have and exercise emergency plans for radiologic incidents that use the Incident Command Systems.[9] Plans should involve hospital radiation experts, such as the radiation safety officer, health physicists, and medical physicists.

These experts can help hospital staff document the presence of radioactive materials, activity levels, and accident details; collect samples that document contamination; assist in decontamination procedures; conduct and document dose calculations; and dispose of radioactive wastes.

Other federal guidelines exist. For example, the Occupational Safety and Health Administration recently published mass casualty guidelines addressing protection for first receivers during releases of chemicals, radiological particles, and biological agents (overt releases) that produce victims who may need decontamination before medical care is administered.[12]

Protecting yourself

First and foremost, remember that no health care provider has ever received a significant radiation exposure by treating a contaminated patient.[5,9] Protection involves limiting your radiation exposure, the use of personal protective clothing, and contamination control. You can reduce your exposure through time, distance, and shielding. Limit time near a radiation source, increase your distance from the source, and use shielding between you and the radiation source.[7]

Protective clothing in a radiation emergency is similar to that used in universal precautions and includes gowns, caps, masks, splash shields, and waterproof boots.[5,7,9] All open seams and cuffs should be taped using masking or adhesive tape. Two pairs of gloves should be worn. The first pair, preferably colored, should be worn under the arm cuff of the outer gown and secured by tape. The second pair of gloves should be easily removable and replaced if they become contaminated. The outer gloves should preferably be white to clearly show if the outer glove has been removed and not replaced. A radiation dosimeter should be assigned to each team member and attached to the outside of the surgical gown at the neck, where it can be easily removed and monitored by a radiation safety officer. Waterproof aprons can be worn when using liquids for decontamination.[5,7]

The Nuclear Regulatory Commission limits the exposure of pregnant workers to 5 mGY for the entire pregnancy.[9] Therefore, during a radiation emergency pregnant hospital workers should be reassigned to areas where exposure is unlikely.

Remember, unlike most hazardous materials, radioactive material can be easily detected, even in small quantities, with the use of a simple and readily available survey meter, such as a Geiger counter.[7] The purpose of donning extra clothes mentioned above is to give yourself a layer of clothing to keep your own clothes and body from becoming contaminated.

Organizing for an incident

Detailed response procedures are beyond the scope of this article; however, the website of the Radiation Emergency Assistance Center/Training Site (REAC/TS) at the Oak Ridge Associated Universities (www.orau.gov/reacts/) has demonstrations of using protective clothing, prepping a treatment area, removing contaminated clothing, surveying for contamination, and decontaminating wounds and intact skin.

If your hospital receives advance notification, you should implement your hospital's radiation emergency plan. Your primary goal should be to provide patient care while limiting the spread of contamination. Preparation is great if you have the time, but if you have an unstable patient who arrives, the priority is to stabilize the patient.

Select a treatment area near an outside entrance. Remove any equipment that will not be needed and assemble any additional required items. This will include a survey meter (Geiger counter), extra 4x4s, ABD pads, small and large sample bags, surgical drapes, tape, and irrigation solution. You will also need a number of large plastic-lined waste containers. The treatment beds should be covered with several layers of waterproof sheets that can be removed as you decontaminate the area.

Check your survey meter to obtain and record a background reading. This reading will be used to compare readings with the patient. The goal for removing contamination is to get as close to the background level as possible. The average background reading is 20 to 60 counts per minute.[5]

REAC/TS gives the following guidelines:[5]

General:

- If in doubt, assume contamination.
- Avoid contact with contaminants.
- Do not eat, drink, or smoke in areas where radioactive materials are located.
- Wear protective clothing.

When providing emergency care:

- Set up a controlled area large enough to hold anticipated number of victims.
- Prevent tracking of contaminants by covering floor areas with paper if your hospital plan calls for it. Some hospitals with nonporous floors like linoleum have made the decision not to cover them.
- Monitor and restrict access to the controlled area through the use of security personnel.
- Use a buffer zone or secondary control line for added security.
- Use a radiation meter and assess anyone or anything leaving the controlled area to prevent further contamination, taking special care with hands, feet, and face. People exhibiting radiological contamination must remain in their controlled area until they can be sufficiently decontaminated or wrapped in sheets if their medical condition requires their emergent movement to another section of the hospital.
- Use strict isolation precautions, including double bagging of all wastes and protective clothing.
- Control waste by using large plastic-lined containers for clothing, linens, dressings
- Control ventilation to prevent airborne contamination.
- Survey hands and clothing with radiation meters at frequent intervals. Change instruments, outer gloves, drapes, etc., when they become contaminated or when preparing to touch "clean" areas.
- Use waterproof materials to limit the spread of contaminated liquids, for example, waterproof surgical drapes.

Triage

The goal of triage is to evaluate and sort victims for priority in treatment to do the greatest good for the most people.[9] In many radiological events, the vast majority of people involved will be exposed to very low doses of radiation (if they are exposed at all). In these cases, there will be no immediate effects, with a potential for delayed effects depending on the dose received. Remember that if patients have only been exposed and do not have radioactive material on their person, there is no need to take any unusual precautions.[5] They can be cared for like any other emergency case.

People who are uninjured or minimally injured and stable should be evaluated at the scene. Removal of clothing and washing the skin with warm soap and water is 95% effective in removing contamination.[1]

Some people may be exposed to doses large enough to cause immediate effects. The onset of nausea, vomiting, fatigue, and anorexia within hours usually indicates a significant and lethal radiation dose.[7,9]

Most patients in the immediate vicinity of a dirty bomb will present with symptoms of blast or burn (chemical or thermal) injury in addition to radiation exposure.[9] Patients who have combined injury will have increased morbidity compared to patients who received the same dose of radiation without trauma.

Assessment and treatment of serious medical problems is the No.1 priority.[5,7] Never delay critical interventions because you are concerned about contamination. Patients with life-threatening presentations, such as a compromised airway or severe hemorrhage, should receive enough immediate treatment to preserve life and to be stabilized. While the health team conducts the standard ABC's of triage, the radiation safety officer will quickly survey the patient. A quick survey tells you whether you are dealing with a contaminated patient.

Once stabilized, patients should have all their clothes removed for a more definitive survey. Care should be taken not to spread the contamination around. Clothing should be cut off, not ripped, from head to foot (away from the airway) and rolled outward so that the outer surface that is most likely more contaminated is rolled away from the patient. Before log rolling the patient, you should change your gloves because you have touched the

patient's outer garments and are likely contaminated. Sheets and clothing should be double bagged, labeled, and removed from the treatment room to prevent them from causing inaccurate survey readings.

Decontamination involves removing external contamination and is conducted first in open wounds, then in or near body orifices, and finally on intact skin.[5] Open wounds are a direct pathway for internal contamination and should be decontaminated as soon as medical priorities permit. Decontamination of intact skin can be delayed because most radioactive materials are not readily absorbed through intact skin in the first hour after contact.

Decontamination is accomplished by simple irrigation or gentle washing with soap and water starting at the outside of the area and circling inward. First washes have the greatest chance of removing large amounts of contaminated material. Do not scratch or abrade intact skin while trying to get it clean or you risk internal contamination. Care must be taken not to spread contamination through splashes or water spills. Field dressings and embedded particles should be removed using tongs to maintain as much distance between a possible source and your fingers as you can. Decontamination should continue until efforts are no longer giving you lower survey readings. Decontaminated wounds should be bandaged with sterile waterproof dressings.[5]

The dose received is determined by dosimeter readings; biological changes are determined by lab tests, accident reconstruction models, and other methods.[9,13] Doses can be estimated by observing the onset of signs and symptoms, especially vomiting, and observation of lymphocyte depletion.[1,7] Elements of the history most important in assisting with dose calculations are presence of nausea, vomiting (start date, time, and severity), tachycardia, fatigue, weakness, abdominal pain, headache, and fever; any drug therapy used; and the results of any cytogenetics. It is important to note any recent nuclear medicine tests. See table for the specimens that help assess radiation injury.

Initial care

If a patient has received an acute dose greater than 1 Gy (100 rad), efforts must be made to close wounds, cover burns, reduce fractures, and perform surgical definitive treatments within the 48 hours after injury, before pancytopenia, immunosuppression, and delayed healing occur. After 48 hours, surgical interventions should be delayed until hematopoietic recovery has occurred, which usually takes about three months.[9]

Definitive care options

Patients with higher exposures will require hospitalization. Because they will be immunosuppressed, consider the use of a burn unit. Treatment is symptomatic and should target the prevention of infection. Antibiotics should be given to sterilize the gut and treat opportunistic infections. Hematopoietic growth factors to stimulate blood cell production should be given within the first 24 to 48 hours and then daily.[6,13]

Acute radiation syndrome

Acute radiation syndrome (ARS) is characterized by the following: the radiation dose must be large (greater than 0.7 Gy or 70 rads); the dose usually must be external; the radiation must be penetrating; the entire body or a significant portion of it must have received the dose; and the dose must be delivered in a short time. ARS usually has four stages, whose length and severity depend on the dose received:

- Prodromal stage: the classic symptoms for this stage are nausea, vomiting, and possibly diarrhea beginning minutes or days after the exposure.
- Latent stage: In this stage, the patient generally looks and feels better. This stage can last for a few hours or a few weeks.
- Manifest illness state: Symptoms are dose-dependent and determined by the type of specific syndrome the patient is exhibiting. This stage may last from hours up to several months.
- Recovery or death: For those who recover, the process may last from several weeks up to two years. Those who do not recover will die within several months of exposure.

(See the chart on the next page for three classic categories of ARS.)

Where you can learn more

Several websites contain excellent information that can be used to augment your knowledge or serve as "just in time" learning if you are confronted with a radiation emergency.

- Radiation basics: www.orau.gov/reacts/define.htm
- Radiation emergencies: www.bt.cdc.gov/radiation/
- Hospital triage in the first 24 hours after a nuclear or radiological incident: www.orau.gov/reacts/triage.pdf
- Acute radiation syndrome: www.bt.cdc.gov/radiation/arsphysicianfactsheet.asp
- Prenatal radiation exposure: www.bt.cdc.gov/radiation/prenatalphysician.asp
- Software to record radiological incidents and assess dose rates: www.afrri.usuhs.mil
- Procedures for patient care in case of terrorism with ionizing radiation: www.afrri.usuhs.mil/www/outreach/pdf/pcktcard.pdf
- Procedures for managing radiation emergencies: www.orau.gov/reacts/procedures.htm

Several universities and federal agencies offer Web-based classes that provide continuing education credit at no cost. Examples include:

- The Emergency Management Institute (part of the Federal Emergency Management Agency of the Department of Homeland Security) offers a wide variety of courses: http://training.fema.gov/EMIWeb/IS/crslist.asp.
- The Centers for Disease Control and Prevention has offered two web-based courses on treatment of radiological patients. The "Role of Public Health in a Nuclear or Radiological Terrorist Incident" can be found at www.phppo.cdc.gov/phtn/default.asp and "Medical Response to Nuclear and Radiological Terrorism" at www.phppo.cdc.gov/PHTN/webcast/radiation-4/default.asp.
- The University of Albany offers "Terrorism, Preparedness, and Public Health: An Introduction," a six-module online course that includes a section on radiological weapons: www.ualbanycphp.org/learning/registration/detail_Terrorism.cfm.
- The Health Alert Network (HAN) site contains links to recent CDC news releases and to the Public Health Training Network, both providing up-to-date information to medical professionals. HAN also maintains a jurisdictional map with links to state and federal public health agencies and an archive of disseminated health messages: www.phppo.cdc.gov/han/

Serious medical problems always have priority over radiological concerns, and immediate attention is given to life-threatening problems. As mentioned earlier, no health care provider has ever received a significant radiation exposure by treating a contaminated patient. Initial and definitive care is symptom-driven and supportive. Most importantly, managing a radiation incident involves preparation, planning, practice, and the realization that contaminated patients do not present an immediate threat, but simply require special handling. While it is impossible to prevent radiological incidents, it is possible to raise awareness and set in place emergency plans and systems that allow for activities to prepare for and respond to future radiological emergencies.

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Print Sidebars

CE363-60b - Course Sidebars

Characteristics of Ionizing Radiation

Characteristics of Ionizing Radiation [1,2,5]			
Type	Characteristics	Shielding	Risk
Alpha particles	Very large, positively charged, highly ionizing. Travel several centimeters in air. Will not penetrate the dead layer of skin.	Thin layer of paper or clothing. Superficial layers of skin.	Negligible external hazard. Internal contamination causes tissue damage.
Beta particles	Very light. Travel anywhere from inches to many feet through air. Moderately penetrating in other materials. Can penetrate human skin to the layer where new skin cells are produced.	Sheet of aluminum foil.	If allowed to remain on the skin for a long time, may cause skin injury. Beta-emitting contaminants may be harmful if deposited internally.
Gamma rays and photons contained in X-rays	Uncharged electromagnetic radiation. Highly energetic. Travel many feet in air and many inches in human tissue, readily penetrating most materials.	Thick layers of dense material, such as lead, tungsten, steel, and concrete.	Protective clothing provides little shielding, but will prevent contamination of the skin with gamma-emitting radioactive material.
Neutrons	Emitted at the time of a nuclear detonation. Neutrons travel many feet in concrete and thousands of feet in air, penetrating most materials.	Thick layers of shielding material, such as concrete.	Significant. Time, distance, and shielding directly affect survivability.

Specimens to Help Assess Radiation Injury

Specimens to Help Assess Radiation Injury [10,13]	
Specimens	Rationale
All patients	

CBC with differential and absolute lymphocyte count. (Be sure to record the time the sample is taken.)	Lymphocytes are very radiosensitive. Drops in serial counts during the first 48 hours can aid in estimating the severity of whole-body dose if one occurred.
Routine urinalysis	Determine whether kidneys are functioning normally. Establish a baseline of urinary constituents.
External contamination suspected	
Swabs from body orifices, wound dressings, or wounds	Assess the possibility of internal contamination.
Internal contamination suspected	
24-hour urine collections x four days. Fecal collections x four days.	Assess the extent of internal contamination.

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CE363 - References

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VIEWPOINTS

CHAPTER 81

Nursing Practice in Homeland Security

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INTRODUCTION TO HOMELAND SECURITY

Before 2001 few individuals had heard of "homeland security." Since then, homeland security has emerged as a critical national issue. Homeland security has exploded as a growth industry in many sectors, including intelligence, physical security, and health care. To explore nursing practice in homeland security, it is important to define homeland security and to understand the role of the health care system in homeland security.

Homeland security has existed in the United States for a long time, but it was not always referred to by that name. In the 1950s, homeland security was "civil defense." For baby boomers, that should bring to mind the "duck and cover" song and fallout shelter drills. A series of natural disasters in the 1960s and 1970s led to the establishment of a federal agency (the Federal Emergency Management Agency) in 1979 to take the lead on coordinating the response to major disasters.

IMPACT OF 9/11

Most citizens of the United States had a sense of security before the terror attacks of September 11, 2001. The nation was surrounded by two oceans and two friendly neighbors. We had survived the Cold War without a single missile being lobbed. Terror attacks occurred regularly in distant places such as Israel and Ireland, but they were far away and usually did not involve Americans. Then the writing on the wall became clearer. Attacks occurred on U.S. military personnel in a housing unit, the Khobar Towers, in Saudi Arabia. Two U.S. embassies were bombed in Africa. In 1993 the World Trade Center was bombed, and that faded quickly from memory. While the United States was debating whether O.J. was guilty and was learning the Macarena, hatred for the American way of life was brewing in the Mideast. The American sense of safety and complacency evaporated when four airliners were hijacked by Islamic terrorists and were used as high-yield explosives.

WHAT IS HOMELAND SECURITY?

Following the terror attacks on the United States, the term *homeland security* spilled into American discussions. But what exactly is it? In broad terms, homeland security is all activities undertaken to do the following:

- Prevent harm to American citizens and property
- Defend the nation against attack
- Prepare to respond to events that cause damage and casualties
- Recover from any attack, disaster, or event that causes large numbers of casualties

Homeland Security or Homeland Defense?

The federal government defined homeland security initially as "A concerted national effort to prevent terrorist attacks within the U.S., reduce America's vulnerability to terrorism, and minimize the damage and recover from attacks that do occur" (Office of Homeland Security, 2002). The term *homeland defense* is broader than *homeland security;* it includes all traditional military activities. The Department of Defense defines *homeland defense* as "the protection of U.S. sovereignty, territory, domestic population and critical defense infrastructure against external threats and aggression" (Tomisek, 2002). Because many military

* The views expressed in this chapter are those of the authors and do not necessarily reflect the official policy or position of the Department of the Navy, the Department of Defense, the Department of Homeland Security, the Department of Health and Human Services, the Uniformed Services University of the Health Sciences, or the U.S. government. No funding support was received from these entities.

homeland security activities are coordinated with civilian emergency preparedness and because a strong health care system (military, federal, and civilian) is essential to national security, the term *homeland security* is an umbrella covering many activities.

Homeland security activities are a linked system of diverse entities that work together to protect U.S. citizens. The system includes emergency management, emergency medical services, disaster preparedness, public health, infection control and surveillance, and many others. Woven together, these activities form a tapestry that protects the nation.

ROLE OF THE HEALTH SYSTEM IN NATIONAL SECURITY

The reader may be thinking now, "Isn't homeland security the responsibility of the military services and intelligence agencies?" Yes, intelligence agencies have a specific role in gathering intelligence about threats. The Department of Defense uses military power to protect and defend the nation. However, many other critical threads exist in the homeland security tapestry, and the health care system is a vital one.

A Very Dark Winter

A revelation occurred in the United States in 2001. It became clear that the U.S. health care system, including the health care workforce, was an integral part of national security. Here is an example. An exercise named Dark Winter was conducted to determine how an outbreak of smallpox would affect the United States. As the exercise unfolded, a few cases of smallpox spread to 25 states in 13 days, overwhelming hospitals, local government resources, and the economy and ultimately threatening the stability of the federal government (ANSER Institute for Homeland Security, 2002). This exercise demonstrated how a health care crisis will have powerful and far-reaching impact. Because of exercises such as Dark Winter and actual events, a strong, well prepared, and resilient health care system was recognized as being critical to national security.

WHAT IS THE ROLE OF NURSING IN HOMELAND SECURITY?

Nursing Practice in Homeland Security: A Historical Perspective

Nurses have understood the importance of civic responsibility since the time of Florence Nightingale's efforts during the Crimean War. Indeed by her definition, "a nurse means any person in charge of the personal health of another" (Nightingale, 1969, p. 139). During a time of crisis, nurses commonly provide care to their neighbors, their community, and their nation, but nurses need to do more than just provide direct patient care. Being in charge of the personal health of a person includes working at the community or at the national level to ensure that appropriate policy and planning is in place to provide an effective, systematic approach to care during a disaster.

Nurses have played a significant role in civil defense since World War II. The importance and scope of that role has intensified over time with the changing international political situation, especially with the growing need for preparation for disaster or an act of terrorism. Many of the responsibilities nurses took on during the 1950s and 1960s are needed today. Additionally, a greater need exists for nurses to take an active role in community leadership focused on preparation for disaster response.

In the 1950s, nurses were trained to respond to nuclear attack. Eight hours of training was considered a significant investment by health care agencies, but nurses who were trained then were able to go into communities and answer the questions of their neighbors about not only nursing care issues but also other important issues such as emergency supplies that each family should have (Mills, 1951). The nurse was a vital community link in peacetime preparation and a factor in relieving the burden on hospitals during a war. Indeed, the qualities of a nurse that make her or him vital to civil defense today are best said in the words of the National Organization for Public Health Nursing (1951): "communities ... may need special emergency control measures requiring public health nursing service, skill, and organizational ability" (p. 70). Then as now, one of the greatest contributions of nursing to emergency preparedness is the ability to organize. Nurses are taking leadership roles in planning for mass casualties, strengthening the workforce, and identifying the research agenda.

Nursing Roles in Homeland Security

Nurses participate in homeland security activities in a variety of ways at many levels; some are obvious, others are less so. Every nursing activity that contributes to emergency preparedness and effective response supports homeland security (Table 81-1). The following are some examples of how nurses have become involved in homeland security:

A doctorally prepared nurse leads bioterrorism research efforts at the Agency for Health Care Quality and Research in Rockville, Maryland.

VIEWPOINTS

TABLE 81-1

Examples of Nursing Activities in Homeland Security

	Homeland Security Goals		
	Prepare for Emergency Response	**Prevent Harm**	**Respond to Emergencies**
Examples of nursing activities	Know own response role.	Keep immunizations up to date and participate in immunization programs.	Obtain training to respond effectively in emergencies.
	Have family preparedness plans in place to permit emergency response.	Learn to recognize threatening infectious diseases.	Maintain clinical skills for emergency response.
	Volunteer for a community or national response team.	Use self-protection measures.	Exercise regularly to fine-tune plans

- A Navy nurse serves on the Chemical Biological Incident Response Force of the U.S. Marine Corps, based in Indian Head, Maryland.
- Nurses around the United States volunteer to serve on national disaster medical response teams that are activated to respond to major disasters.
- Three Navy nurses serve as the emergency management officers of hospitals.
- The first director of the Department of Health and Human Services Secretary's Operations Center was a nurse.
- A nurse in Washington, D.C., volunteers with the American Red Cross as an instructor in the Masters of Disaster education program for children and adolescents.
- A nurse serves as the editor of the journal *Disaster Management & Response.*
- An emergency nurse serves as a homeland security policy analyst in Washington, D.C.
- A nurse has served as the director of emergency preparedness activities in the New York region of the Veterans Administration health care system.

NURSING PRACTICE IN HOMELAND SECURITY AT THE INDIVIDUAL LEVEL

The role of the nurse in disaster preparedness starts with the same responsibilities as with every other citizen. Every nurse should do the following:

- Keep first aid and basic life support credentials updated.
- Have a disaster kit.
- Know how to shelter-in-place.
- Have a family disaster plan.
- Prepare one's own family to care for themselves or be cared for without the nurse in the family present.
- Identify what the nurse's role will be during an emergency and discuss that plan with family members.

For the professional nurse, preparedness requires basic competencies. Dr. Kristine Gebbie developed core competencies for the public health workforce that has value for nurses. The core competencies include the ability to do the following (Center for Health Policy, 2001):

1. Describe the public health role in emergency response in a range of emergencies that might arise.
2. Describe the chain of command in emergency response.
3. Identify and locate the agency emergency response plan (or the pertinent portion of the plan).
4. Describe the nurse's functional role(s) in emergency response or demonstrate the role(s) in regular drills.
5. Demonstrate correct use of all communication equipment used for emergency communication (e.g., telephone, fax, and radio).
6. Describe communication role(s) in emergency response: within agency, media, general public, and personal (family, neighbors).
7. Identify limits to one's own knowledge/skill, authority, and identify key systems resources for referring matters that exceed those limits.
8. Apply creative problem solving and flexible thinking to unusual challenges within the nurse's functional responsibilities and evaluate effectiveness of all actions taken.

9. Recognize deviation from the norm that might indicate an emergency and describe appropriate action (e.g., communicate clearly within the chain of command).

NURSING PRACTICE IN HOMELAND SECURITY AT THE ORGANIZATIONAL LEVEL

Nurses who work in hospitals, clinics, schools, public health departments, and other organizations have important roles in homeland security. Regardless of the workplace, every nurse should do the following:

- Know the emergency response or disaster preparedness plan of the organization.
- Know the nurse's role in responding to disaster.
- Take advantage of all training opportunities to improve effectiveness of response in a disaster.
- Actively participate in all disaster response drills and encourage others to take them seriously.
- Know what the organizational plan is to increase patient care capacity in a disaster (i.e., how do you put an extra 50 trauma patients on a full 24-bed surgical ward?).
- In hospitals and clinics, nurses should be familiar with the Joint Commission on Accreditation of Healthcare Organization standards for emergency management.

During every major disaster, nurses have decided whether to report to work, volunteer, evacuate, or stay home to care for their families. Consider the hurricanes that hit Florida in 2004. Some nurses were fired for failure to report to duty during the storms. Planning in advance, knowing the policy of the organization where employed, and discussing the plan with a supervisor must occur before an incident.

NURSING PROFESSIONAL ASSOCIATIONS AND HOMELAND SECURITY

Many professional nursing associations have launched efforts to prepare their members to participate in emergency preparedness and response activities. The American Nurses Association and the U.S. Public Health Service launched a partnership to establish "National Nurses Response Teams." These teams are being prepared to conduct mass chemoprophylaxis (large-scale administration of medication) and mass immunization. These activities may be needed in the event of natural disease epidemic or a bioterror attack. To communities have an adequate number of nurses to provide medication or vaccines to thousands or millions of citizens.

The International Association of Forensic Nurses (2001) passed a resolution calling for worldwide support of nursing education that includes mass disaster preparedness. The International Council of Nurses (2001) issued a position statement describing the need to increase the ability of the nursing profession "to provide adequate health services before and after a disaster occurs by their participation in prevention, mitigation, preparedness and relief operations."

NURSING PRACTICE IN HOMELAND SECURITY AT THE STATE AND FEDERAL LEVELS

Many states now have volunteer registries of nurses who are willing and prepared to respond during a disaster. One of these is the Medical Reserve Corps. Corps volunteers serve the needs of their local communities in activities such as screenings and immunizations. At the national level, nurses may join the National Nurse Response Team or a Disaster Medical Assistance Team (DMAT). These teams train together to respond to disaster on a local and national level. National Nurse Response Team and DMAT nurses are paid a salary, travel expenses, and per diem by the federal government and are covered by federal regulations while provided care during a period of activation, so licensure restrictions are not a problem. Riley (2003) describes the purpose, structure of service, process of becoming a DMAT member, and her own experience in serving on a DMAT team mobilized to New York City on September 11, 2001. Volunteer opportunities exist with the American Red Cross. The American Red Cross is one of the largest disaster relief agencies with more than 40,000 nurse volunteers.

U.S. Department of Homeland Security

The U.S. Congress established the U.S. Department of Homeland Security to help America prepare for, respond to, and recover from potential terrorist attacks, including those involving weapons of mass destruction. More than 22 distinct agencies and more than 170,000 personnel were reorganized into one department with the mission to protect the American homeland.

Homeland security is a shared responsibility, requiring coordination of federal, state, local, and private sector strategies. To that end, the Department of Homeland Security has embarked on a number of initiatives aimed at improving emergency response. Two major initiatives nurses should be aware of are the National Response Plan and the National Incident Management System.

The National Response Plan provides a single, comprehensive, all-hazards approach resulting in a coordinated and effective response, regardless of the cause, size, or nature of the event (Department of Homeland Security, 2004b). The National Response Plan can be implemented partially or fully based on a threat, in anticipation of a significant event, or in response to an Incident of National Significance, defined as a high-impact event that requires a coordinated and effective response by federal, state, local, and tribal private sector and nongovernmental partners in order to save lives, minimize damage, and provide for long-term community recovery. The plan incorporates best practices and procedures from incident management disciplines—homeland security, emergency management, law enforcement, firefighting, public works, public health, responder and recovery worker health and safety, emergency medical services, and the private sector—and integrates them into a unified structure. The plan forms the basis of how the federal government coordinates with state, local, and tribal governments and the private sector during incidents. The National Response Plan establishes protocols to help protect the nation from terrorist attacks and other natural and manufactured hazards; save lives; protect public health, safety, property, and the environment; and reduce adverse psychological consequences and disruptions to the American way of life.

In 2003, President George W. Bush issued a directive ordering the development of the National Incident Management System (White House, 2003). The system provides a consistent nationwide template to enable all government, private sector, and nongovernmental organizations to work together. The system establishes standards that reach across all levels of government and all emergency response agencies (Department of Homeland Security, 2003).

Nurses work in a variety of leadership roles within Department of Homeland Security. In the Federal Emergency Management Agency, nurses conduct credentialing, manage disaster teams and programs, and function as emergency coordinators. In the U.S. Coast Guard, nurses provide health care and direct programs such as quality assurance and health promotion. Department of Homeland Security nurses conduct training and exercises and function as subject matter experts in a variety of terrorism areas. Many contribute to developing national policy and serve on national-level groups such as the Interagency Incident Management Group. The group is a federal headquarters-level, multiagency coordination body that facilitates federal domestic incident management for Incidents of National Significance. The Interagency Incident Management Group provides coordination for federal operations and resources, establishes reporting requirements, and conducts ongoing communications with its partners to maintain situational awareness, analyze threats, assess national implications of threat, conduct operational response activities, and coordinate actual or potential incidents (Box 81-1).

U.S. Department of Health and Human Services

The U.S. Department of Health and Human Services is responsible for coordinating public health and medical response in major disasters. The Department is responsible for "coordinated Federal assistance to supplement State, local, and tribal resources in response to public health and medical care needs (to include veterinary and/or animal health issues when appropriate) for

BOX 81-1

Captain Lynn Slepski's Journey to Homeland Security

Captain Lynn Slepski, U.S. Public Health Service, serves as the Principal Science and Technology Advisor to the Integration Staff and the Science and Technology Operations Integration Director in the U.S. Department of Homeland Security. Captain Slepski has worked in numerous nursing specialties, including critical care, emergency, and preventive medicine and is a certified clinical nurse specialist in community health and a health promotion director. Since 1995, much of her nursing practice has centered on emergency response and emergency operations at the national level, where she has functioned as a Response Coordinator for the Commissioned Corps Readiness Force in the U.S. Department of Health and Human Services Office of Emergency Preparedness and as a counterterrorism expert in the Food and Drug Administration. She is a deployable member of the Public Health Service and the PHS-1 Disaster Medical Assistance Team and has led numerous deployments, including the response to the first anthrax attack on Capitol Hill. Captain Slepski points to her combat experience while an intensive care unit nurse manager during OPERATION DESERT SHIELD/DESERT STORM, extensive training, and multiple deployments with the Public Health Service Commissioned Corps Readiness Force as factors preparing her for her current role.

...ual or actual Incidents of National Significance ... during a developing potential health and medical ...tion" (Department of Homeland Security, 2004a). ... activities are defined in Emergency Support ... tion 8, a part of the U.S. National Response Plan. ... Emergency Support Function 8 has five functional ... assessment, surveillance, medical personnel, ...cal equipment and supplies, and coordination of ... health and medical assistance (Box 81-2).

...e U.S. Public Health Service plays a significant ... homeland security by providing surge capacity ... the nation's response to mass casualty incidents. ...Health Service commissioned corps officers can ... deployed rapidly to areas of greatest need. The nurse ...ory, the largest category of Public Health Service ...ers workforce, is the most frequently requested ... They usually respond in coordination with exist... ...cal resources to the site of the incident and work ... with nurses from the American Red Cross.

The Department of Health and Human Services is also responsible for the health care and public health sector critical infrastructure protection coordination. This responsibility includes working closely with medical material, occupational health, and health care professionals. Two of the organizations with which the department has worked are the International Nursing Coalition for Mass Casualty Education and the Association of State and Territorial Directors of Nursing. Through these efforts, nurses are working on methods to coordinate nursing communication better during crises and to improve sharing of critical homeland security information.

BOX 81-2

Captain Roberta Lavin's Journey to Homeland Security

Captain Roberta Lavin is a U.S. Public Health Service nurse officer who serves as the Chief Policy Officer for the Assistant Secretary for Public Health Emergency Preparedness in the Office of the Secretary, Department of Health and Human Services. She was detailed to the Department of Health and Human Services Secretary's Operations Center after the anthrax attack of 2001 and became the first director before the establishment of the Office of Public Health Emergency Preparedness, where she currently serves. Captain Lavin is a ...tified family nurse practitioner who maintains ...ative practice. She has had a diverse career ...uding work in mental health, correctional ...lth, and immigration health. While at the ...sion of Immigration Health Services, she ...ame involved in disaster response while ...ing as the coordinator of the Emergency ...ical Response Team. She attributes her ...gnment in homeland security to her ...nizational ability and critical thinking.

U.S. Department of Defense

The U.S. Department of Defense is one of three partners in the National Disaster Medical System. The system is the national health care safety net in the event of a major disaster with casualties that overwhelm a specific location. In the event of a major catastrophe in the United States, the Department of Defense, the U.S. Veterans Administration health care system, and the Department of Health and Human Services work together to provide hospital beds and health care for victims of disaster. Nurses in the Department of Defense are trained for deployment to the combat theater, and many nurses receive additional trauma training. All health care providers in the Department of Defense now are required to complete training in response to chemical, biological, radiological, nuclear, and explosives events. In the event Department of Defense personnel are called upon to support other U.S. agencies in responding to a disaster in the United States, Department of Defense nurses will be valuable in supplementing civilian resources (Box 81-3).

Department of Defense nurses have responded to many emergencies and are a part of many national emergency preparedness efforts. The U.S. Navy deployed its 1000-bed hospital ship, USNSCOMFORT, to New York City following the terror attacks of 2001. Navy nurses served aboard ship, providing care and respite to disaster responders. Responders from all the military services cared for victims of the attack on the Pentagon. Department of Defense personnel stand by to provide emergency response during events of national importance in the Washington, D.C., area. Military nurses travel with the President and Vice President to ensure immediate emergency care is available at all times—a vital step in providing for the continuity of government. Department of Defense personnel, with other federal personnel, mounted an extensive response to the anthrax contamination of Capitol Hill in 2001.

The Air Force Medical Services have several self-contained emergency care systems including the Expeditionary Medical Support and the Air Force Theatre Hospital. The Expeditionary Medical Support was deployed to Houston, Texas, following massive

BOX 81-3

Captain Mary Chaffee's Journey Into Homeland Security

Captain Mary Chaffee is a Navy Nurse who has served on active duty and in the reserve component for 21 years. She is an emergency nurse with a background in health policy, nursing administration, critical care, and informatics. Following the terror attacks of September 11, 2001, she was assigned to serve in the Emergency Operations Center of the Federal Emergency Management Agency and then served as the director of the Navy Medicine Office of Homeland Security. She believes she was selected to lead the initial homeland security efforts of the U.S. Navy Medical Department because she had a sustained record as an effective leader, innovator, and problem solver. Captain Chaffee is a member of the board of directors of the International Nursing Coalition on Mass Casualty Education and serves on the editorial board of the journal *Disaster Management & Response*. She guided the development of a hospital-preparedness program that was recognized as a runner-up in the 2004 Harvard University/John F. Kennedy School of Government "Innovations in American Government" award program in homeland security.

flooding that paralyzed all hospitals in the city in June 2001 (Skelton, Droege, & Carlisle, 2003). Army nurses serve in a variety of roles supporting homeland security, including on Special Medical Augmentation Response Teams. These teams are trained and equipped to respond to trauma, chemical, and biological events and burns, and to provide care for psychiatric and other needs (Barajas, Stewart, & Combs, 2003).

EDUCATIONAL PREPARATION IN HOMELAND SECURITY AND EMERGENCY PREPAREDNESS

Mandatory Continuing Education

Many nurses have found that they need to learn more about emergency preparedness and response, and many programs are available for this (Table 81-2). Only two states, Texas and Nevada, require continuing education in emergency preparedness for nurses. Texas, for example, every two years in the registered nurse licensure cycle requires two hours of continuing education relating to preparing for, reporting medical events resulting from, and responding to the consequences of an incident of bioterrorism (Texas Legislature, 2003).

How to Assess Quality in Education Programs

Until the establishment of national-level role competencies and training standards, anyone can proclaim themselves to be an "expert" in homeland security. How does one judge quality and select carefully? Consider the source. Is the provider a reputable firm, associated with a university or a federal entity? What are the qualifications of the faculty? Is continuing education credit offered by an appropriate governing body? Until credentialing standards are enacted, awareness-level courses in disaster preparedness and terrorism from the National Response Plan and the National Incident Management system are good choices.

Educational Competencies

Several professional groups are working to establish core competencies for nurses. These groups include the American Red Cross (2003), the Association of Teachers of Preventive Medicine (2003), and the International Nursing Coalition for Mass Casualty Education (2003). The International Nursing Coalition for Mass Casualty Education is composed of representatives from major schools of nursing and organizations such as the American Nurses Association; the American Academy of Nursing; the American Association of Colleges of Nursing; the National League for Nursing; the National Council for State Boards of Nursing; the nursing education accreditation commissions (National League for Nursing Accrediting Commission and Commission on Collegiate Nursing Education); the U.S. Air Force, Navy, and Army Nurse Corps; the U.S. Public Health Service; and major nursing specialty organizations. The International Nursing Coalition for Mass Casualty Education is developing a comprehensive plan for educating nurses and has developed core competencies for mass casualty response. Web-based training and classroom programs are in preparation.

Academic Settings

Several schools of nursing, such as at Duquesne University, John Hopkins University, St. Louis University, the University of Massachusetts at Lowell, the University of Tennessee, the University of Texas at Austin, and the Uniformed Services University of the Health Sciences, are incorporating disaster preparedness and mass casualty content into classes at the undergraduate and graduate levels.

For nurses who prefer self-designed education, many books and journals are available, and a wide variety of resources reside on the Internet (Table 81-3).

TABLE 81-2

Training Opportunities in Homeland Security and Emergency Preparedness

Sponsor	Title/Description	Web Address
	Web-Based Training	
American Journal of Nursing	Five continuing education modules on topics such as agents of terrorism, smallpox, and radiological incidents	http://www.nursingcenter.com/prodev.ce_list.asp?flag=cat&id=405978
American Red Cross and Sigma Theta Tau International*	Disaster Preparedness and Response for Nurses	http://www.nursingknowledge.org/Portal/Main.aspx?pageid=36&SKU=1050
California Distance Learning Health Network†	48 distance learning webcasts on a variety of bioterrorism/risk management topics	http://cdlhn.com/clickhere.cfm?type=n&id=113&title=Skills%20Training%20Institute
Centers for Disease Control and Prevention†	Multiple archived programs such as smallpox vaccine handling and storage, plague, and mass antibiotic dispensing	http://www.bt.cdc.gov/
Domestic Preparedness Campus†	WMD/Terrorism Awareness for Emergency Responders WMD Incident Management/Unified Command Concept	http://www.teexwmdcampus.com/main.cfm
Emergency Management Institute†	Variety of relevant topics to include the National Response Plan (IS 800), National Incident Management System (IS 700), and Incident Command (IS 100), as well as disaster preparedness and response	http://training.fema.gov/EMIWeb/IS/crslist.asp
Nursing Spectrum‡	Biological Weapons and Emergency Preparedness Parts I and II (286B and 287B), SARS (323). Texas-specific continuing education requirement Biological Weapons & Emergency Preparedness for Nursing Licensure in Texas ($20)	http://www2.nursingspectrum.com/ce/self-study_modules/
Public Health Training Network†	Variety of courses	http://www.phppo.cdc.gov/phtn/default.asp
University of Albany School of Public Health‡	Terrorism, Preparedness and Public Health: An Introduction Six modules: all types of hazards	http://www.ualbanycphp.org/learning/registration/detail_Terrorism.cfm
U.S. Army Medical Research and Material Command and Veterans Administration*	Six modules dealing with smallpox, nerve agents, vaccines, chemical threat agents, and history	http://www.biomedtraining.org/webcast.htm

*Nongovernmental.
†Governmental.
‡Private.

Continued

TABLE 81-2—cont'd

Training Opportunities in Homeland Security and Emergency Preparedness

Sponsor	Title/Description	Link to Access
	Homeland Security and Emergency Preparedness Courses	
American Red Cross*	Disaster Health Services: An Overview (ARC 3076-1)	Contact your local American Red Cross chapter.
	Homeland Security and Emergency Preparedness Courses	
	Introduction to Disaster Services (ARC 3066) Disaster Health Services Simulation (ARC 3076-2)	To find your chapter, search this link: http://www.redcross.org/index.html
George Washington University‡	Response to Emergencies and Disasters Institute (READI). Courses at the awareness, performance, and management levels	http://readi.gwu.edu/
Noble Training Center, Anniston, Ala. (Department of Homeland Security)	Healthcare Leadership Course	http://www.training.fema.gov/EMIWeb/EMICourses/FY%202006%20EMI%20RS%20Schedule.doc
Quinnipiac University‡	Disaster and Mass Casualty Management Overview of responses to and management of natural and manufactured disasters	http://www.quinnipiac.edu/x1789.xml?ID=3713
University of Texas at Austin‡	Disaster Nursing Discusses the roles of nurses in mass casualty disasters	http://www.utexas.edu/nursing/html/disaster/utexas.html
	Certificate Courses	
Saint Louis University School of Nursing‡	Disaster Preparedness for Nurses Core and elective modules	http://www.slu.edu/colleges/NR/cne_disaster_prep_home.html
	Advanced Homeland Security Training Opportunities for Nurses	
American Red Cross*	Clara Barton Center for Domestic Preparedness	Contact your local American Red Cross chapter
University of Pittsburg School of Nursing‡	Acute Care Nurse Practitioner Program Trauma and Emergency Preparedness Clinical Emphasis	http://www.pitt.edu/~acnp/tep.html
University of Rochester School of Nursing	Leadership in Health Care Systems—Disaster Response and Emergency Preparedness track	http://www.urmc.rochester.edu/son/AcademicPrograms/disaster_management.cfm
University of Ulster, Northern Ireland	Postgraduate diploma/master of science degree in disaster relief nursing	http://prospectus.ulster.ac.uk/course/?id=1134

TABLE 81-3

Internet Resources for Nurses on Homeland Security and Emergency Preparedness

Sponsor	Topical Area	Link
American Red Cross*	Family disaster plans and disaster check list	http://www.redcross.org/services/disaster/0,1082,0_601_,00.html
American Red Cross*	Disaster FAQs	http://www.redcross.org/faq/0,1095,0_378_,00.html
Association of State and Territorial Directors of Nursing	Disaster resources for nurses	http://www.astdn.org/publications.htm
Center for Disease Control and Prevention†	Emergency Preparedness and Response	http://www.bt.cdc.gov/
Department of Homeland Security†	Threat information; how to develop an emergency plan	http://www.ready.gov/index.html
Emergency Nurses Association‡	Weapons of mass destruction resource list	http://www.ena.org/EmergencyPrepared/WMD/Resources.PDF
Florida Department of Health	Statewide Public Health Nursing Disaster Resource Guide	http://www.doh.state.fl.us/PHNursing/disasterguide.html
International Coalition for Mass Casualty Education†,‡	Basic nursing competencies for response to mass casualty situations	http://www.incmce.org/
SAMHSA Disaster Technical Assistance Center	Disaster health resources	http://www.mentalhealth.org/dtac/default.asp
U.S. Army Medical Research Institute of Infectious Diseases Blue Book†	Agent identification and treatment	http://www.usamriid.army.mil/education/bluebook.htm

*Nongovernmental.
†Governmental.
‡Private.

RESEARCH

Some research has been conducted related to the role and competency of nursing in disaster response and homeland security, but there is a great need to expand the knowledge base in this area. Some recent research efforts include the following:

- Shih, Liao, Chan, and Gau (2002) examined the impact of a major earthquake on Taiwanese nurses as rescuers.
- Robison (2002) explored Army nurses' knowledge of triage in a mass casualty event.
- Nufer and Wilson-Ramirez (2004) compared patients' needs following two hurricanes.
- Riba and Reches (2002) described how Israeli nurses cope with multicasualty terror attacks.
- French, Sole, and Byers (2002) compared nurses' needs and concerns after Hurricane Floyd.
- Mitani, Kuboyama, and Shirakawa (2003) examined factors affecting nurse participation in response to sudden-onset disasters.
- Wisniewski, Dennik-Champion, and Peltier (2004) assessed nurses' education needs in emergency preparedness.

The Agency for Healthcare Research and Quality and the National Institutes of Nursing Research sponsor research by nurses, but nursing research focused on disaster response is seriously lacking. This is not the result of governmental lack of focus but rather the apparent low priority nurses put on this research despite the climate that would suggest an urgent need. Supported by the Department of Health and Human Services, the International Nursing Coalition for Mass Casualty Education developed a research agenda for nursing related to mass casualty education. The agenda includes new uses of technology, approaches to assessment, and methods of learning.

In addition to qualitative and quantitative research, there is value in nurses documenting their experience in disaster situations and publishing these "lessons

learned." Examples include Cullen's chronicle (2003) of her experience in responding to the Rhode Island nightclub fire and Jurkovich's description (2003) of nursing efforts after the attack on the Pentagon.

A complete research agenda should be developed for the profession to address unanswered questions. What approach best uses nurses during a disaster when there are too few nurses to meet the demand? Historically, what civil defense policies were effective? What types of skills are needed during the different types of disaster, and what is the best use of nurses? What is the minimum amount of training and current clinical experience needed to respond to a disaster? Which credentialing model would best ensure competent care during a disaster? What factors affect the ability of nurses to report to duty during a disaster and what action could increase the percentage of nurses reporting? Is it more effective to train more nurses or to train the community in self-care during a disaster so that every citizen is a first responder?

As the largest component of the U.S. health care workforce, nurses have a significant role to play in homeland security. Because of the constant risk of natural disaster, transportation or industrial disaster, and the new threats of terror attack, it is vital for nurses to recognize the importance of their contributions in emergency preparedness and disaster response. From senior levels of government to individual preparedness at home, nurses can make a great difference in how well prepared the United States is to respond to the next disaster.

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Emergency Preparedness and Disaster Response Competency (Accepted). (Oral Presentation). Karen A. Rieder Nursing Research Session. The Association of Military Surgeons of the United States', *114th Annual Meeting*, San Antonio, TX, to be presented on November 10, 2008

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What's All This Disaster Preparedness Talk About? The State of the Science - Be Prepared: What Nurses Need to Know About Disaster Response (Pre-Conference) Sigma Theta Tau International 39th Biennial Convention '*Vision to Action: Global Health Through Collaboration',* Baltimore, MD, November 11, 2007

Fitting In: Understanding the National Response Plan and National Incident Management System - Johns Hopkins School of Nursing, Baltimore, MD, September 25, 2007

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Terrorism: The Role of Nursing - Johns Hopkins School of Nursing, Baltimore, MD, April 15, 2007

Emerging Threats and the Role of Homeland Security
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Public Health: It IS an Advanced Practice
Johns Hopkins School of Nursing, Baltimore, MD, February 28, 2006

Making It All Fit Together: The Department of Homeland Security, the National Response Plan and Pandemic Planning University of Tennessee, Knoxville, TN, February 22, 2006

Homeland Defense: Where a Nurse Fits In - Johns Hopkins School of Nursing, Baltimore, MD, June 6, 2006

ADDITIONAL ACADEMIC ACTIVITIES

Adjunct Faculty Appointments:

Johns Hopkins School of Nursing Since January 2007

Vanderbilt School of Nursing Since January 2004

Student Research Guidance:

Dr. Susan Garbutt, March 20, 2007, Case Western Reserve University, DNP, *Evaluation of an Instrument to Measure Nurses Familiarity With Emergency Preparedness*

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