AHA

Advancing Health in America

**November 1, 2001**

To: State Association Chief Executive Officers
Metropolitan Association Chief Executive Officers

From: Al Jackson, Vice President
Political Affairs and Grassroots Advocacy

Subject: AHA's Hospital Resources for Disaster Readiness Assessment

Attached is a revised version of the AHA's Hospital Resources for Disaster Readiness assessment. This is only a draft, the final version will be attached to today's Fax Update. We are asking our members to share the assessment with their legislators to help explain the scope of the task at hand. In addition, it is important that we remind our friends on the Hill that this sizable task comes on top of our continued work to provide care to the communities we serve 24 hours a day, seven days a week.

Thanks in advance for your hard work in this regard, if you have questions or comments, feel free to contact me.

Cc: State Association Government Relations Officers

Attachment

# Hospital Resources for Disaster Readiness

The American Hospital Association has developed the following overview of the needs of the nation's hospitals related to future mass casualty events. Many experts agree that it is a matter of "when" and not "if" such an event will occur. Without warning, hospitals in New York, Washington DC, Pennsylvania, Virginia, Maryland, New Jersey, and Connecticut were prepared to answer the call when it came on the morning of September 11th. America's hospitals will be there to do so again. The September 11th attacks, unfortunately, resulted in high mortality and few survivors. Hospitals were ready to respond but few patients appeared. The more recent spate of anthrax cases in Florida, New York, New Jersey and Washington, DC has been a further test of hospitals' readiness to address the increasing possibility of future mass casualty incidents.

However, the stakes have clearly been raised since the September 11th attack. Hospitals need to upgrade their capabilities. In a nuclear, biological, or chemical (NBC) attack, hospitals would be severely challenged without access to additional resources. The recent anthrax scare has shown that hospitals can adequately respond to an attack yielding a small numbers of patients, but questions remain about their readiness to deal with larger scale attacks.

This paper will provide a rough estimate of what each of the nations 4,900 acute care hospitals would require to increase their ability to respond to a NBC attack. We will distinguish between readiness resources required for the nation's approximately 2,700 metropolitan hospitals and 2,200 non-metropolitan hospitals. For metropolitan hospitals, we estimate the average number of total full-time equivalent (FTE) employees per hospital at 1,200, with 370 clinical staff. For a non-metropolitan hospital, we estimate the average number of total FTE employees per hospital at 300, with 90 clinical staff. The source of these hospital statistics is the AHA's *Hospital Statistics* database.

The resource estimates below are based on a scenario that includes an event with casualties of 1,000 individuals seeking care at a metropolitan hospital and 200 individuals seeking care at a non-metropolitan hospital. We estimate what these hospitals would need in order to sustain these intense demands for approximately 24 to 48 hours. After this period of time, we assume that the Centers for Disease Control and Prevention (CDC) Bioterrorism Preparedness and Response program, especially its National Pharmaceutical Stockpile program, would be mobilized, and provide additional medical supplies to the impacted community. It should be noted, however, that this program is not fully implemented and concerns about its weaknesses have been raised (See, *Combating Terrorism: Accountability Over Medical Supplies Needs Further Improvement*, GAO-01-666T).

The AHA is also exploring a number of other options related to readiness, including the need for regional coordination of community-wide efforts to deal with an incident of biological or chemical terrorism; the need for educational efforts by federal, state and local government to help hospitals and other members of the healthcare infrastructure best utilize the resources outlined below; and the need to address changes in certain

regulations, such as the Health Insurance Portability and Accountability Act (HIPAA), the Emergency Medical Treatment and Active Labor Act (EMTALA), and other requirements on hospitals that may actually impede our ability to prepare for and ultimately respond to acts of terrorism. Further, because health care workers in hospitals would be first responders in an outbreak resulting from biological terrorism, they may face a higher risk of infection than the general population. Therefore, the AHA, in consultation with public health authorities, will be addressing whether health care workers should be given priority with regard to inoculation against certain biological agents (such as smallpox and anthrax) that are considered to be potential terrorist threats. These issues will become agenda items for our readiness efforts.

In this document, we have included only those items that would be essential for the short-term (24 to 48 hours) disaster response. However, we believe that what is ultimately needed, in both the short and long-term, is an operationally effective response system and the integration of hospitals into the community-wide response for mass casualty events. Because mass casualty events will, by definition, overwhelm the resources of a single hospital, they should be seen as community-wide concerns likely to require a broad array of community resources to supplement the health care system. Therefore, a community-wide perspective and community-wide planning is essential for readiness. Local government must be involved in such planning, including the public health department, police and fire department. Other community resources are likely to be called upon and should be included in community-wide planning, including public transportation officials, news media, telephone and communication systems, schools, churches, voluntary disaster relief organizations, restaurants and food suppliers.

In order to ensure the readiness of the nation's hospitals for such events, this paper will attempt to provide a credible roadmap toward that goal. Operationally effective response systems must be defined and developed so as to be sustainable over time. All related training also must be sustained over time.

The following key areas must be addressed to increase hospital readiness:

- Communication and notification
- Disease surveillance, disease reporting and laboratory identification
- Personal protective equipment
- Facility
- Dedicated decontamination facilities
- Medical/surgical and pharmaceutical supplies
- Training and drills
- Mental health resources

**Communication and notification**

Mass casualty incidents create a demand for public information and multiple means for communication with community first responder organizations. In most cases, at least some of the information will not be readily available while the incident develops. In our mass media and multi-media culture, every news and information source will seek access

to the latest and most up-to-date information. Absent clear and credible information, speculation may reign, and increase the stress and pressure of the incident, especially on the hospital and its staff. Therefore, planned and structured arrangements for communication throughout the incident and during its response are critical components of hospital and community preparedness. For example, all organizations involved in the community preparedness plan for mass casualties, including hospitals, need to agree in advance on who will serve as the single, regional spokesperson. If a government official is designated as the spokesperson, health experts must be provided to assist the official with responses to medical questions. To minimize disruption of hospital patient care activities, press events should be conducted away from health care facilities, using regularly scheduled and pre-announced media briefing times.

Further, in a mass casualty incident, it is critical that hospitals have an ongoing, open channel of communications with the public safety community who may have first awareness of the incident. A community-wide network using the same channel is necessary. The network should be tested daily, with the test rotating across the various hospital and emergency medical services (EMS) shifts. Members of the public safety community, such as fire, EMS, public health departments, state, local and federal law enforcement, and hospitals, normally rely on effective communications to provide emergency medical care, rescue accident victims, respond to natural disasters and investigate crime. One of the "lessons learned" from the experiences in the recent New York City attack, at Columbine High School in Colorado and in response to the Oklahoma City bombing is the need for greater coordination of public safety communications. These types of communications may become even more critical in the case of an NBC attack.

One of the key issues regarding public safety communications is "interoperability." Interoperability refers to the ability of different public safety entities to communicate with each other, on demand, in real time. Common problems experienced by the public safety community include the failure of equipment in "dead spots," interference, insufficient equipment, outdated equipment and channel congestion. An array of technologies including pagers, cellular phones, mobile data terminals and mobile laptop computers are currently used. However, a recent report suggests that existing local land mobile radio systems are, on average, nearly 10 years old, with state agencies having considerably older infrastructures (See, Public Safety Wireless Network Program Analysis of Fire and EMS Communications Interoperability, April 1999).

Most public safety organizations, including hospitals, have experienced problems with interoperability. There is a critical need for funding to upgrade and modernize public safety communications systems and to address interoperability problems. In addition, public safety communications face a variety of issues related to spectrum. These are serious interoperability problems that arise from the fragmentation of public safety spectrum. The most effective way to better ensure interoperability is to incorporate the fundamental principles of the Incident Command System into each level of emergency preparedness planning. Additional spectrum may be required, as well as improved planning and management of the interoperability spectrum.

In case existing systems fail in an emergency, alternative and redundant communications systems (e.g., cell phone, two-way radio, ham radio, unlisted numbers, web-based, video conferencing, and use of human couriers) will be required as back-up. Loudspeakers or bullhorns for communicating with the public outside the facility may also be required for the purposes of crowd control. Finally, translators and translated patient resource documents for non-English speaking patients will also be needed, as well as clear signage plans for directing patients to appropriate locations within the facility.

The following are resources needed for increasing preparedness and developing an adequate communications system for metropolitan and non-metropolitan hospitals.

- Coordination of public safety communications (fire, EMS, public health department, other hospitals, Federal Bureau of Investigation, Office of Emergency Preparedness, etc.)
- Alternative communications system if hospital communications fail/overload (e.g., cell phone, two-way radio, ham radio, unlisted numbers, web-based, video conferencing, courier system)
- Translators for non-English speaking patients and translated patient resource documents.
- Loudspeakers/bullhorns for communicating with individuals outside the facility
- Signage for communicating instructions to patients and for designating various emergency functional areas

| | Per hospital | All hospitals in category |
|---|---|---|
| Metropolitan hospitals: | $75,000 | $202,500,000 |
| Non-metropolitan hospitals: | $37,500 | $82,500,000 |

**Disease surveillance, disease reporting and laboratory identification**

A terrorist attack involving nuclear, biological or chemical agents could occur in an overt or covert manner. Most typical of terrorist actions to date is that of a sudden and highly localized event producing immediate casualties, such as an explosion. This is also the most likely scenario for an attack involving chemical weapons.

Scenarios involving the deployment of a biological agent are expected to occur covertly, with increasing numbers of patients presenting to hospitals and physicians offices over the course of hours to weeks with signs and symptoms that may be common to many diseases and conditions. Radiologic agents could be released in either a covert or overt manner.

Improving hospital disease surveillance and disease reporting, and the public health infrastructure will be critical to determining that a cluster of disease may be related to the intentional release of a biological or chemical agent. Particularly for biological agents, an effective medical response will be critically dependent upon the ability of individual clinicians, who may be widely scattered around a large metropolitan area, to identify, accurately diagnose, and effectively treat an uncommon disease. To facilitate this level

of readiness, laboratory diagnostic capability will need to be upgraded and laboratory personnel will require additional training.

The rapid identification of the chemical, biological or radiologic agents involved in any such incident is vital to the protection of the first responders and emergency medical personnel at local hospitals, as well as to the most effective treatment of resulting casualties. Further, readiness will require a special ability to track large numbers of patients and handle and display comprehensive amounts of real-time patient information, with the ability to integrate with systems currently used by federal, state, regional and local agencies.

What follows are some of the improvements, equipment and tests that will be critical to ramping up hospital disease reporting, disease surveillance and laboratory identification capacity.

- Improvement of hospital disease surveillance, disease reporting, and public health infrastructure
- System to facilitate expedited disease reporting, dissemination of real-time treatment guidelines and access to experts
- Informatics
- Patient tracking system
- Detection instruments/monitors for detecting radiation
- Tests/assays for detection of chemical agents and toxic industrial materials
- Serologic/immunologic/nucleic acid tests for identification of biologic agents

| | Per hospital | All hospitals in category |
|---|---|---|
| Metropolitan hospitals: | $750,000 | $2,025,000,000 |
| Non-metropolitan hospitals: | $375,000 | $825,000,000 |

**Personal protective equipment**

Personal protective equipment (PPE) refers to clothing and respiratory apparatus designed to shield an individual from chemical, biological or other physical hazards. The "universal precautions" (gloves, gown, mask, goggles, etc.) used by medical personnel to prevent infections will generally provide protection from the biological agents commonly considered to be threats. However, in the event of a large-scale biological event, hospitals would have to provide at least this level of protection to all staff. A hospital's daily inventory of such items would be quickly exhausted and the replacement of these supplies and equipment would be necessary. This is particularly the case because hospitals would have to be prepared to receive not only patients who would be decontaminated in the field, but also patients who "walk in" without being decontaminated. Initial triage must be performed by health care workers in appropriate PPE. Today, hospitals generally are not stocked with suitable PPE to protect clinicians and other health care workers from exposure in the event of a biological or chemical attack, particularly one involving an unknown agent.

The highest level of PPE provides the utmost protection for the worker, but carries the disadvantages of being extremely costly to purchase and train staff members in its use, and is a very awkward ensemble in which to function. Other levels may provide appropriate protection levels and yet overcome some of the disadvantages. All levels of protection will fall under Occupational Health and Safety Administration (OSHA) regulations for respiratory protection (29CFR 1910.134) and personal protective equipment (29CFR 1910.132). A requirement for training hospital employees in the use of PPE also must be included in disaster planning.

Level A protection provides the highest level of respiratory and skin protection. The suit provides a fully enclosed environment for the health care worker, being chemical resistant and impermeable to gases and vapors. Chemical resistant boots and gloves also should be worn. It is used with either a self-contained breathing apparatus (SCBA) internal to the suit or a supplied-air respirator. According to OSHA this is the level of protection to be used with an unidentified agent. This level of protection is extremely cumbersome, hot to wear and may hinder communication.

Level B protection provides slightly less skin protection than level A, in that the suit does not provide a fully enclosed environment for the worker, but still a high level of respiratory protection. It is also chemical resistant, but does not fully protect against vapors, which may be harmful to the skin. Chemical resistant boots and gloves also would be required. At this level the SCBA tank would be worn outside of the suit, or a supplied-air respirator may also be used. Although less than level A, level B protection is still cumbersome and warm, as well as limiting to communication.

Level C protection is also chemical resistant and splash proof, with chemical resistant gloves and boots required. At level C, a full- or half-face air-purifying respirator may be used. With this type of respiratory protection, it is essential that the chemical agent be identified, as the cartridges must filter that specific agent. There are some respirators available with stacked cartridges to address organic vapors and acid gas, and to provide high efficiency particulate air (HEPA) filtration. This latter system may prove to be effective against most agents expected to be utilized in a situation of chemical terrorism.

Level B protection will be appropriate for front-line clinicians in most health care applications. It provides a high level of protection, yet provides more ease of movement and comfort for the health care worker, while also being less costly than level A protection. Additionally, with SCBA or air-purifying respirators with full head cover, immediate knowledge of the specific identity of the agent is not required. For most agents encountered in a hospital setting, level B will be adequate, although not the highest level of available protection. However, level C protection, with stacked cartridges may also suffice. A health care organization must make its own determination concerning appropriate PPE based on regulatory requirements, evaluation of potential hazards, and consultation with local emergency response agencies. If, during the course of an incident, the contaminant is identified and determined to be a lesser threat than originally assessed, the level of personal protective equipment can be downgraded.

For metropolitan hospitals, we assume that a basic "universal precaution" level protection would be required for 1,200 FTE employees, with Level B protection available to 50 clinicians functioning in a front-line capacity – decontamination, triage, emergency room (ER), operating room (OR), laboratory, radiology, and custodial personnel – over the course of 48 hours in an event involving 1,000 patients presenting to the hospital. For non-metropolitan hospitals, we assume that the basic level of protection would be required for 300 FTE employees, with Level B protection available for 20 front line clinicians – decontamination, triage, ER, OR – over the course of 48 hours and in an event yielding 200 patients at the hospital.

- Gloves, gowns, HEPA masks (OSHA/NIOSH-approved high efficiency particulate), goggles, shoe covers – available to all employees with allowances for frequent glove, gown and mask changes (metro hospital $65,000, non-metro hospital $16,000)
- Fit-testing HEPA mask – at $75 per person for all employees (metro hospital $90,000, non-metro hospital $22,500)
- Level B protection for front-line clinical staff includes:
    - SCBA operated in positive pressure mode
    - Fit-testing and maintenance requirements for SCBAs
    - Hooded, two-piece chemical resistant suit
    - Chemically resistant gloves and boots

  Estimated cost of $7,000 per person; metropolitan hospital $350,000; non-metropolitan hospital cost of $140,000

| | Per hospital | All hospitals in category |
|---|---|---|
| Metropolitan hospitals: | $505,000 | $1,363,500,000 |
| Non-metropolitan hospitals: | $178,500 | $392,700,000 |

**Facility**

Newly constructed and existing hospitals must comply with the Life Safety Code (LSC) developed by the National Fire Protection Association. The LSC is intended to provide a level of life and occupancy safety necessary to protect patients, personnel, visitors and property from fire, smoke and other products of combustion. It provides a process for inspecting, testing and maintaining fire protection and life safety systems, equipment and components on a regular basis. In addition, each hospital must develop policies and procedures that include written criteria evaluating various deficiencies and construction hazards.

In the case of a NBC attack the following additional items and capabilities must be contemplated:

- Lockdown capability to minimize access to facility and facilitate direct patient flow to specific points
- Other security measures such as perimeter checks, hospital-issued staff photo identification badges, visitor badging/identification and package handling.
- Auxiliary power source

- Increased storage capacity for fossil fuels to provide uninterrupted power
- Portable negative air machines and HEPA filters
- Large volume water purification equipment
- Expanded mortuary facilities to manage bodies with high contamination or infectivity potential
- Designated hospital locations for personnel quarantine
- Expanded patient isolation facilities , including separate air handling system
- Expanded storage space for stockpiles of PPE, pharmaceuticals and supplies.

| | Per hospital | All hospitals in category |
|---|---|---|
| Metropolitan hospitals: | $75,000 | $202,500,000 |
| Non-metropolitan hospitals: | $37,500 | $82,500,000 |

**Dedicated decontamination facility**

Patient decontamination is the process of removing or neutralizing hazardous chemical, biological or radiologic agents from an injured or otherwise exposed individual in order to reduce the risk to the individual and minimize secondary exposure to health care workers and other patients in the facility. Hospitals should have a minimal level decontamination facility for ambulatory and non-ambulatory patients for small events; the ability to ramp-up quickly for a medium level event; and access to a regional decontamination facility for a large-scale event.

An outdoor facility or area can be effective, particularly to prevent contaminants from entering a fixed health care facility. An outdoor facility also is suitable for handling any large influx of injured or exposed individuals. It also holds the advantage of not requiring a dedicated air-handling and ventilation system, as would be required in an indoor decontamination facility. There are several drawbacks, including the requirement for providing protection from inclement weather and providing additional lighting. Each hospital must consider all such relevant factors in making a decision regarding appropriate decontamination facilities.

- Hospital decontamination room, including:
  - Dedicated entrance from the ambulance entrance
  - Ventilation: negative pressure (minimum of 12 air changes per hour) and dedicated exhaust with HEPA filter
  - Water supply: emergency eyewash and shower (with hot and cold water)
  - Waste water containment: Floor drain directs decontamination water to a commercially available, 500-gallon hazmat-compatible (polypropylene) holding tank, with sample port, bypass valve and extra holding tanks.
  - Electrical: Two explosion-proof pendant fixtures (not affixed to the ceiling), with two 48 x 1 inch 32W T8 tubes per fixture with full electronic ballast; external light switch, and; explosion-proof receptacles, protected by ground fault interrupters.
  - Decontamination tables

    - Storage: PPE, medical and other decontamination room supplies should be stored in a cabinet alcove outside the decontamination room. A hazardous waste drum should be in the room for contaminated patient clothing, etc.
    - Provision for the storage and identification of patient clothing and personal items/valuables, pending possible disposal requirements.
- Provisions to extend decontamination into the parking lot or other large area using portable units, including:
    - Outdoor shower systems with hot and cold water supply, with provision for separate showers for male and female patients
    - Adequate containment for run-off waste water
    - Separate tents for male and female patients
    - Portable generator(s) for power and for heating/air conditioning based on weather
    - Portable lighting units for use during evening operations
    - Soap, dispensers, brushes, etc.
- Facilities for safe collection, containment, storage and disposal of contaminated materials
- Extra patient linen for decontaminated patients and hospital scrubs as change of clothing for hospital staff working in the decontamination room/area

| | Per hospital | All hospitals in category |
|---|---|---|
| Metropolitan hospitals: | $500,000 | $1,350,000,000 |
| Non-metropolitan hospitals: | $250,000 | $550,000,000 |

**Pharmaceutical and medical/surgical supplies**

Hospitals must be properly stocked with antibiotics, antitoxins, antidotes, ventilators, respirators and other supplies and equipment needed to treat patients in a mass casualty event. We assume that external sources of drugs and related supplies (e.g. CDC's National Pharmaceutical Stockpile) will be available within 24 hours of the detection of a biological or chemical agent. Therefore, hospitals would have to be prepared to sustain a 24-hour supply of pharmaceutical products at the most common dosage for the estimated number of patients and hospital personnel. Provisions and planning also must be made for appropriate dosages and formulations for children who may be victims. For medical/surgical supplies and equipment, a standardized formula must be developed to adequately determine stock requirements.

In addition to needed pharmaceuticals and medical supplies that are directly related to attacks using biological or chemical agents, hospitals may need to increase their in-house inventory of routine drugs, biologicals and medical supplies. As a cost containment initiative, many, if not most, hospitals have very tight inventory controls in place. If local transportation is disrupted or local warehouses destroyed, hospitals will need to be able to survive for 24-48 hours with on-hand pharmaceuticals and supplies for all purposes until relief supplies arrive. The need to increase their on-hand stock may be especially important for high-use items, such as insulin, that are taken daily by large numbers of people with chronic conditions. If local retail sources of such drugs become unavailable

or local retail sources are unable to replenish their stock, chronically ill individuals who lose access to their home supplies are likely to turn to their local hospitals to access needed drugs and biologicals.

For pharmaceutical and other supplies used rarely in the normal course of hospital activity, particular attention must be paid to appropriate dosing, shelf life and stock rotation issues. A plan for pooling of resources through mutual aid agreements among area health care facilities should be considered for such rarely used products and supplies.

*Suggested pharmaceuticals and related supplies*

- Bacterial agents
  - Ciprofloxacin
  - Doxycycline
  - Penicillin
  - Chloramphenicol
  - Azithromycin
  - Rifampin
  - Streptomycin
  - Gentamicin
- Botulism toxin:
  - Mechanical respiratory ventilators
  - Other associated supplies
- Cyanides
  - Cyanide antidote kits containing amyl nitrite, sodium nitrite and sodium thiosulfate
- Lewisite
  - British anti-lewisite
- Nerve agents:
  - Atropine
  - Pralidoxime chloride
  - Diazepam (or lorazepam)
- Pulmonary agents:
  - Oxygen ventilators
  - Respiratory care supplies
- All agents:
  - Resuscitation equipment and supplies
  - Vasopressors and vasopressin vials

*Other equipment and supplies:*

- Mechanical respiratory ventilators (adult, pediatric, neonate)
- IV pumps and poles
- IV supplies (for 1,000 patients)
  - IV Fluids- D5W, D5NaCl, D5 lactated Ringers (need one per initial patient)
  - In-dwelling catheters (need one per initial patient in each size)
  - IV sets (enough to handle one per initial patient)

- Suction machines
- Stretchers
- Wheelchairs
- Linens
- Bandages and dressings

| | Per hospital | All hospitals in category |
|---|---|---|
| Metropolitan hospitals: | $600,000 | $1,620,000,000 |
| Non-metropolitan hospitals: | $300,000 | $660,000,000 |

**Training and drills**

Staff training is needed at all levels of the organization for all types of potential disasters: nuclear, biological, chemical and conventional. The training needs to be stratified by educational level, from general staff awareness to technician level. Further, drills must be conducted at least twice a year, according to requirements of the Joint Commission on the Accreditation of Healthcare Organizations, (JCAHO), and involve all key staff. Additional disaster drills beyond those required by JCAHO, particularly those integrated into local/state/federal disaster drills, would enhance the level of hospital readiness and staff competence in the event of a mass casualty incident.

- *Training:* Using Web-based format with hard copy materials for all levels of staff on mass casualty event awareness and preparedness (initial orientation, annually, periodic)
- *Development of on-site disaster-response training courses* (equipment, supplies, course manuals, trainers). This would include, but not be limited to, clinical training on biological and chemical topics involving staff from ER, urgent care, primary care, laboratory and others involved in emergency response. Should include training on pediatric casualties.
- *At least two drills annually*: Functional exercise, full disaster drill, and additional hours on development of the scenarios and logistics.
- *Training on the use of personal protective equipment*
- *Training on set up and use of decontamination systems*

| | Per hospital | All hospitals in category |
|---|---|---|
| Metropolitan hospitals: | $500,000 | $1,350,000,000 |
| Non-metropolitan hospitals: | $250,000 | $550,000,000 |

**Mental health**

Survivors of mass casualty events and responders to such incidents (fire, police, rescue workers, health care professionals, etc.) will suffer not only physical injury requiring medical care but also will undoubtedly undergo extreme psychological trauma. Thus the deployment of chemical, biological or nuclear agents against a population produces both acute and chronic psychiatric problems. In a disaster, several different groups would require mental health services, both direct and indirect:

- Individuals presenting at the door or brought to the facility by rescue personnel, including those who have specialized needs such as pregnant women, children, elderly, or those who have an underlying mental health problem that may or may not have been previously treated;
- Fire, police and rescue workers injured while attempting to save a life
- Injured individuals, including children, who have witnessed the death or serious injury of a family member or colleague;
- Family and friends of the missing, injured or dead. This group may suffer mental distress that may require immediate mental health services or physical treatment;
- "Worried well" individuals who may need reassurance that they are not ill;
- Administrative staff responsible for making decisions that affect the facility's ability to quickly respond to a mass casualty disaster;
- Communication/professional staff to handle media inquiries and present accurate and appropriate information so that the general public and institutions will be able to process the information; and
- Facility staff working the disaster to ensure they are mentally and physically fit. There would be an immediate on-site need for critical incident stress debriefing to be conducted for those providing trauma and triage care.

Beyond physical injuries, individuals who have survived a disaster also would be experiencing extreme emotional distress that could also manifest in physical conditions. This could include, but not be limited to, physical shock, hysteria, anxiety, fear, anger, frustration, and guilt, as well as an inability to communicate information critical to their treatment. For example, a survivor with a heart condition or asthma may require both immediate physical help and crisis intervention to be able to calm down and prevent further injury or distress. Finally, some individuals also may want to leave facilities to find loved ones or colleagues or to return to a safe place, whether or not they are physically or mentally able to do so. This might require close monitoring or short-term containment.

The following estimate was provided by the New York-Presbyterian Healthcare System, 525 E. 68th Street, New York, NY, whose recent experience provided some answers regarding this question. According to their estimate, triage and initial evaluation for one day of 1,000 individuals (assuming an average salary of $75,000) would require that 31.25 FTEs provide four direct service evaluations per hour. This would be a direct cost of $9,375 per day. In addition, administrative services would cost $2,500 per day with total service personnel of $11,875. Other costs would include additional security, medications and administrative costs of $10,000, for a total of about $22,000 for a metropolitan hospital. We assume that a non-metropolitan hospital would bear about half the total cost of a metropolitan hospital.

| | Per hospital | All hospitals in category |
|---|---|---|
| Metropolitan hospitals: | $22,000 | $59,400,000 |
| Non-metropolitan hospitals: | $11,000 | $24,200,000 |

**TOTALS**

| | **Per Hospital** | **All Hospitals in Category** |
|---|---|---|
| **Metropolitan Hosp** | **$3,027,000** | **$8,172,900,000** |
| **Non-metropolitan Hosp** | **$1,439,500** | **$3,166,900,000** |
| **TOTAL:** | | **$11,339,800,000** |