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Hospital Disaster Response: Are You Really Prepared?

Is your hospital prepared for the next disaster? This article is designed to generate discussion into the adequacy of your hospital's current emergency response plan. Hours upon hours of work go into creating a hospital's emergency response plan that is designed to respond to a myriad of disasters. As with any large-scale plan, it may appear flawless on paper, but may fall well short during actual performance. To paraphrase a famous quote, every battle plan works perfectly until first engagement. This article is designed to review some of the basics of hospital disaster plans, and offer topics for hospital administrative personnel to discuss with their staff.

In the United States, there has been a large emphasis placed on disaster response training since 2001. Following September 11th 2001, hospitals everywhere reviewed their disaster response plans to include scenarios that seemed so unthinkable that they once would only be thought of as a plot in a Hollywood movie. Disaster plans must now address situations such as statesponsored terrorism, weapons of mass destruction including chemical, biological radiological, nuclear and explosive agents, and cyber terrorism. In 2005, Hurricane Katrina struck the United States Gulf Coast and severely tested hospital disaster plans. Katrina proved that many hospitals in fact could handle a large-scale disaster, but only for an extremely short period of time. Most hospital disaster plans assumed that help would arrive within 12-24 hours following the incident. Katrina showed that help could be days, if not weeks away.

Disasters are not just limited to the United States. The reported frequency of mass casualty disaster incidents has increased significantly over the past 50 years. In the last ten years, over two billion people worldwide have been affected by disasters (Campbell 2005).

Since 2002, many hospitals have made dramatic strides towards increasing their ability to respond to disasters. However, a recent report from the Center of Biosecurity states "The nation's healthcare system still remains largely unprepared to respond to large-scale catastrophic emergencies" (Toner et al. 2009).

A research study conducted by the United States Department of Health and Human Services Agency for Healthcare Research and Quality assessed hospital training and mock responses to mass casualty incidents. Their research found several key points that were common to most all hospitals:

- Internal and external communications are the key to effective disaster response;
- There must be a well-defined incident command centre to reduce confusion;
- Conference calls are an inefficient way to manage disaster response; and
- An accurate and frequently updated list of phone numbers for key personnel is essential (Hsu et al. 2004).

All Hazards Planning

An all hazards plan is an integrated planning approach to any realistic threat to an organisation including natural disasters, terrorist attacks, and any other incidents that could threaten the operational capacity of a hospital. When an all hazards plan is produced, it needs to address the following:

- Preparedness
  - Development of plan and procedures
  - Increase response capabilities
- Incident mitigation and response
  - Sustaining critical mission operations
  - Protection of personnel
- Recovery
  - Restoration of organisational functions

How up to date is your all hazards plan? Does it address current threats? One of the most devastating threats will arrive with very little fanfare. A cyber attack on a critical government infrastructure can absolutely cripple a community. We have become so dependent on computers that they affect almost every facet of our lives.

How dependent on computers is your facility? What kind of impact would there be if you could not use a computer for an hour, a day, or a week? Does your disaster plan prepare for cyber attacks on your facility? This is a very realistic threat with a high level of operational impact that must be considered.

Communication

The Achilles' heel of disaster management has historically been communication. Hospitals need to have multiple redundancies built into their communication plan. When performing a basic critical infrastructure vulnerability analysis, communication is frequently one of the most critical vulnerabilities. Hospitals have to work in tandem with local communication providers to harden the communication infrastructure. Does your hospital all hazards plan take into account a complete and total communications failure? Imagine the potential for destruction if a terrorist organisation could eliminate all phone, Internet and intranet communication at your facility! Most hospitals have gone to a total paperless system

for charting, ordering procedures, and countless other treatment modalities. Loss of communication in any infrastructure can prove to be crippling. Although almost every hospital would be severely hampered by losing communication, would your facility be able to compensate? One of the greatest hurdles faced in the first 24 – 48 hours following Hurricane Katrina was the inability to communicate to any outside agency. Every hospital in essence became an island for several days. Is your hospital prepared to be completely self sufficient for at least 48 – 72 hours? Do you maintain a stockpile of the paper forms that you hospital used before going paperless? These forms may prove absolutely invaluable if there was a total loss of computer communication.

Security

Security is a vital link in disaster response. If your emergency department has four shooting victims arrive from a gang shooting, do you automatically "lock down" the emergency department? How difficult is it just to secure your emergency department? Does your facility have the ability to completely secure every entrance? How big is your security force? Historical data has shown that the majority of patients from a large-scale event will self-transport to the closest hospital. Along with the concern of a large influx of patients, the United States Center for Disease Control has found several problems for hospitals that are common when patients self transport from a mass casualty scene.

If a major event happened blocks from your hospital, would you be able to completely lock down your hospital and prepare for the onslaught of patients? If there was an incident at an elementary school which numerous injured children, could your hospital handle the influx of worried parents? How many security officers would it take to secure every entrance at your facility? If you gave the orders right now to lock down your hospital, how long would it take? Could you secure your facility within five minutes? Odds are, in a real event, you will have less than five minutes after notification to prepare for the onslaught of patients.

Security is vital in protecting the facility from the rush of injured patients and the "worried well", but could your hospital actually be a target of terrorist activity? The attacks by the Al-Qaeda trained Chechens in Georgia have shown that hospitals are often considered as targets by terrorists. Chechen rebels have attacked hospitals both as primary and secondary targets. What better way to completely decimate a community then to injure people and destroy the place where they would be treated?

One of the biggest threats is also one of the hardest to protect against. The use of car bombs has proven an effective weapon that is difficult to prevent. Most hospitals are designed to allow for vehicles to pull up close to the building to facilitate loading and unloading passengers. How easy would it be for a car bomb to pull into your emergency department? Odds are, they would be able to park within 20 feet of the entrance to your facility. More and more high-threat buildings being built are having counter-measures designed and installed to deter car bombs. Unfortunately, convenience is the price that is paid for increased security to minimise this threat.

Decontamination

When was the last time that your staff unpacked all of the patient decontamination equipment and practiced with it? We have had the opportunity to teach disaster decontamination at several hospitals. It is always disheartening to see staff open up equipment that is several years old and still in the original package. Our history has shown us that over half of the participants in these disaster preparation classes have never seen their hospital's decontamination equipment prior to the class. However, each of the participants in the class was already assigned an active role in their hospital's disaster response plan.

All personnel who have an active role in the disaster plan that is outside of their normal daily duties should have routine training. The complexity of their role should dictate the frequency of their training. Personnel who have a complex role (i.e. patient decontamination) should train at least quarterly on their duties. At Spartanburg Regional Medical Center in Spartanburg, South Carolina (United States), the hospital emergency response team (HERT) is comprised of personnel from all disciplines. These personnel train often and are ready to respond at a moment's notice to threats to the facility of any level.

Surge Capacity

Surge capacity is the hospital's ability to rapidly expand services in order to accommodate an unanticipated influx of patients in the event of a large-scale event. Hospitals throughout the world are faced with daily staffing shortages. In many places, hospital personnel are already providing care at sub-optimal patient care ratios. Hospitals are staffed based on daily, anticipated capacity, not for the unusual. A study of hospitals in the Los Angeles, California (United States) area found that out of 45 area hospitals, almost all operated all constant full capacity with very little ability to handle surge capacity.
To stress this point, the problem of "patient parking" has become more common in the United States. Patient parking occurs when an emergency department is too full to accept a patient, and does not allow the ambulance to offload the patient, but instead requires the crew to wait with the patient until a bed is available. Patient parking has resulted at times, in an ambulance waiting hours with patients for a bed to become free. This obviously has a massive negative impact on the abilities of the ambulance service.

What is your daily surge capacity at your facility? Do you share information each day with other local hospitals to see the availability of beds in the event of a large disaster? If you do not want to share this information with competing hospitals, do you send the information to a neutral third party such as the emergency services provider? The person(s) in the community with the responsibility to manage disaster must have bed capacity information provided to them daily.

Evidence-based disaster medicine shows that for every patient who arrives to the hospital with physical injuries, five more will arrive with psychological injuries (Hankins 2009). Most patients will self-present at the hospital within one hour of the incident.

The optimal method for predicting and preparing for hospital surge capacity is not yet known. However, hospitals should strive to prepare for a myriad of incidents that can occur in their community that would produce multiple patients. It is also hard to predict the disaster that may exhaust specific resources such as surgical suites, ventilators, or burn beds. Literature from previous mass casualty disasters shows that the majority of patients will be discharged from the hospital within 24 – 72 hours following admission (Einav-Bromiker and Schecter 2009).

Reliability on External Resources

When we have provided disaster training, we have had the opportunity to review multiple hospital disaster plans. An all hazard plan that relies on outside agencies or resources to mitigate a disaster is a set up for failure. Many hospitals are under the false impression that the local emergency services agency will be able to assist with patient decontamination in the event of a large incident. If there is a large hazardous materials incident, the emergency service's primary obligation is to mitigate the incident. Fire department and ambulance resources cannot be dedicated to assisting hospitals with decontamination. If resources are available, emergency service agencies would be more than willing to assist, but they cannot be counted on in the disaster plan. Hospitals must be as self-sufficient as possible, and designed to operate for at least seven days before receiving outside help.

Relationships

When a hospital or community suffers from a disaster, it is imperative that in addition to being self-sufficient, they must also have a working relationship with other facilities in the area. These relationships may be with direct competitors and facilities that are not typically encountered on a daily basis. By developing relationships in advance of a disaster, the call for assistance made by your hospital in the event of disaster will not be made to a stranger. It has been proven time and time again that relationships forged in advance of a disaster can pay dividends in the event of an actual disaster.

Disaster Drills

The Joint Commission on Accreditation of Healthcare Organisations (JCAHO) requires all hospitals in the United States to test their emergency plan twice a year, including one community-wide drill. The authors recently were involved as instructors in a large community disaster drill. Every hospital in the community was asked to participate in the drill. It was rather disheartening to hear several of the hospitals decline to participate in the drill with each offering the same excuse: "We are understaffed. We can't afford to send anyone to the drill, nor can any of the mock patients come to our facility." What better way to test your ability to respond to a disaster then when you are already short staffed! Disaster drills should be realistic as possible, and under-staffed hospitals are a very realistic issue!

Conclusion

In closing, disaster planning should encompass all legitimate threats. Hospitals must consider the possibility of being a primary target in terrorist operations. In order to limit the impact of a large-scale disaster, hospitals must have multiple systems of redundancy to back up their critical infrastructures. Hospitals must also limit their reliance on outside agencies to provide support during disasters. Ideally, hospitals should be completely self-sufficient for a minimum of seven days. Hospitals must routinely train and drill participants on their roles and responsibilities in a disaster. By emphasising these core components of disaster management, hospitals minimise the impact to their operational abilities during a largescale disaster.

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