

On Our Watch: Preparing for Overcrowding and Bioterrorism in the Emergency Department

Based on the meeting held on January 10, 2003 at the
Sheraton Chicago Hotel and Towers Chicago, Illinois

Sponsored by the Illinois College of Emergency Physicians,
and supported by the Illinois Department of Public Health
and a HRSA Bioterrorism Preparedness Grant

*Written by John Williams, MD, and edited by Edward P. Sloan, MD,
MPH for the Foundation for the Education and Research in
Neurological Emergencies (FERNE), who prepared this document for
the Illinois College of Emergency Physicians.*

Contact Information

Illinois College of Emergency Physicians
www.icep.org
info@icep.org
(630) 495-6400 or toll-free at (888) 495-ICEP

Introduction

Emergency Departments are facing increasing demands that threaten to outstrip their resources. State and national experts spoke in a daylong conference on January 10, 2003, sponsored by the Illinois College of Emergency Physicians (ICEP). This meeting was designed to give emergency caregivers some strategies for coping with the current overcrowding crisis. The reasons for the current overcrowding situation and our preparedness for the potential effects of a bioterrorism attack were discussed. Also discussed were how overcrowding affects patient care and access, how it increases liability, and how EMTALA laws relate to these issues. Surveillance initiatives that can help manage Emergency Department capacity and successful disaster planning methods were proposed. Finally, online information management and internet-based communication tools were discussed that could have a role in the early detection of chemical and bioterrorism attacks.

The following white paper is compiled from the lectures given at the January 10, 2003 Illinois College of Emergency Physicians symposium "On Our Watch: Bioterrorism and Overcrowding the Emergency Department." The Illinois Department of Public Health and a HRSA Bioterrorism Preparedness Grant supported this meeting.

At the beginning of each section of this document, there are bullet points that highlight the key learning points from each speaker's lecture. The paragraphs that follow then provide greater detail of the lecture content.

**Surge Capacity and ED Crowding:
Can We Have One Without Fixing the Other?**

Susan Nedza, MD, MBA, FACEP

*Board of Directors, American College of Emergency Physicians
Clinical Instructor, Division of Emergency Medicine
Northwestern Memorial Hospital
Chicago, Illinois*

- The capacity to handle disasters begins with learning to manage present demands for health care.
- Hospitals must adapt and respond to the local community's changing needs.
- Cooperation and communication between all parties involved are central to this effort.

Emergency Medicine is the "ground zero" for health care, and the Emergency Department is central to the health care of the nation. The capacity of the hospital to handle bioterrorism disasters begins with the ability to deliver quality health care more efficiently on a regular basis. Many Emergency Departments already operate at or near full capacity every week. Hospitals are struggling to cope with increasing numbers of patients with fewer available resources and thus, are ill prepared to cope with mass disasters.

If we are to be prepared for bioterrorism events, we must first be able to define and meet the present needs for emergency care in each community. Health care leaders must recognize how the medical needs of their community change over time. In order to accurately predict and manage local demands on the health care system, the tools we use for assessing those needs must improve. This requires better communication and partnering between all parties involved, both public and private, including health care practitioners and institutions, as well as local and state governments.

There are no clear solutions to the present dilemma. Sound planning and leadership are needed now more than ever before. Only a coordinated, thorough, and well-planned effort will be successful. This represents the greatest challenge and a tremendous opportunity to redefine the future of emergency care in this country.

Illinois Department of Public Health on Crowding and Bioterrorism

John R. Lumpkin, MD, MPH, FACEP

*Director, Illinois Department of Public Health
Springfield, Illinois*

- An mass disaster emergency medical response has five stages:
 - 1) planning
 - 2) identification
 - 3) notification
 - 4) mobilization
 - 5) treatment
- Disease surveillance systems provide an early warning of disease outbreaks.
- A statewide electronic emergency management system provides early warning of disasters.
- The greatest challenge is to transform our present system.

The first stage of a mass disaster emergency medical response is *planning*. In devising a disaster plan it is best to build on existing systems such as the EMS and Trauma systems. A national electronic disease surveillance system is proposed. Identifying outbreaks of disease can be challenging since patients often present with flu-like symptoms. This non-specific presentation makes microbiological identification crucial. Surveillance must therefore be efficient and continuous. Such a system would increase survival through early *identification* of potential threats once they have occurred, in part by increasing laboratory capacity.

Notification of appropriate state and local authorities is accomplished through phone and internet-based channels. Rapid response *mobilization* for the disaster involves a physician-led multi-disciplinary team, of which there are four in Illinois. These teams are known as the Illinois Medical Emergency Response Teams, or IMERT. Finally, *treatment* involves the implementation of disaster plans in which trained teams work with local authorities at or near the scene of the disaster. Antibiotics and medical supplies from one of several National Pharmaceutical Stockpiles are then repackaged in Illinois and are available for distribution within 24 hours.

Hospital preparedness should incorporate bioterrorism training into all aspects of hospital procedures (infection control, pharmacy, security, media, etc.). Community-wide planning should be included also, such that efforts are shared and coordinated

among institutions and agencies such as local health departments, hospitals, and EMS systems. This ensures that efforts are not duplicated or competing within a community.

How well prepared are we? Chicago's 1995 heat crisis revealed flaws in our ability to handle heavy demands in a large-scale emergency. Excessive demands, including 465 heat-related deaths, compromised the delivery of services to all patients, both those with heat and non-heat-related illnesses. During this heat crisis, 23 (55%) of 42 area hospitals were on bypass at some point, and waiting room delays of over 12 hours and ambulance travel times of over 30 minutes were recorded. Many hospitals have undergone cost-cutting measures (which reduced available beds and staff) while the demand on their services has increased. This leaves them operating at or above capacity on a daily basis, and unable to cope with increased demand.

An important step in bioterrorism preparedness is the implementation of a new statewide electronic emergency management system, which could provide an early warning for mass disaster events. Such a system would provide a real-time snapshot of the status of the state's hospitals and EMS systems, such as those hospitals on bypass and ambulance diversions, twenty-four hours per day. It would also notify automatically (via pager or email) appropriate personnel of irregularities such as a cluster of hospitals on bypass. As an indicator of surge capacity, it could provide an early warning for mass disaster events.

The challenge now is to transform the managed care-based system, which in many regards is failing to keep up with the increasing demands that are being placed upon it. Years of cost containment, and other socio-economic changes have weakened our preparedness and capacity to handle surges in demand. This is a complex problem to which there are no definitive solutions; the programs discussed here are improvements. These solutions require systems change, and will require input from every aspect of the health care community.

Managing Ambulance Diversion: Deck Chairs on the Titanic?

Christopher Felton, MD, FACEP

*President and Chief Medical Director,
EMSystem, Division of Infinity HealthCare
Milwaukee, Wisconsin*

- Stopgap procedures, such as ambulance diversion, are ineffective in managing overcrowding.
- Technology matched with expertise can help manage resources and prepare for emergencies.
- The three stages of a bioterrorism response include prevention, early detection, and mitigation.

Focusing on superficial responses (such as ambulance diversions) to over-burdened Emergency Departments will not improve the current crisis. Real change will come from re-visioning the problem and redesigning our approach. In other words, the entire situation must be analyzed freshly and thoroughly rather than attempting to impose limited changes on particular problems. As an example, using one system to manage daily events and another system to engage in the event of a disaster is less effective than using the same system for both, and with which people are familiar, that can be "ramped up" when demand increases.

The use of technology can aid these changes if it is well constructed. Improved communication is essential for information gathering and dissemination. The early detection and warning of potential threats (syndrome surveillance) is facilitated by automated data collection and communication over the Internet from sites around the state, between acute care personnel, public health officials, and Emergency Departments.

Mitigation of a disaster, once it has been identified, is accomplished through a planned, practiced, and coordinated response. This is achieved through careful planning using sophisticated electronic methods and resource management tools, such as those systems developed by Infinity Healthcare and EMSystem of Milwaukee. Specific details of the program or system software were not discussed, but further information may be obtained from the author.

Overcrowding: Should Your Disaster Plan be Activated?

Andrew I. Bern, MD, FACEP

*Founder and Chair, Section of Disaster Medicine,
American College of Emergency Physicians
Clinical Professor of Emergency Medicine,
Nova Southeastern University School of Medicine
Attending Physician, Delray Medical Center
Coral Springs, Florida*

- Medical disasters and overcrowding are similar problems.
- Emergency Departments should coordinate an effective response to disasters and not become the center of the disaster itself.
- Six new JCAHO mandates to compel hospitals to better prepare.
- The "ten C's" examine the critical disaster plan components.
- Activation of a disaster plan is less important than the preparation and tools put in place for it.

There is a common link between overcrowding and medical disasters: both overwhelm Emergency Departments and hospital resources, outstripping the capacity for providing health care. The goal is to maintain the flow of patients through the Emergency Department (and into the hospital, as needed). This also requires hospitalized in-patients to have timely and efficient dispositions in order to maintain the capacity for new admissions. When one point stalls, the flow is interrupted, the system backs up, and the Emergency Department can become quickly saturated. With ambulance diversion, patient care is simply shifted to other facilities, where a similar problem may exist. This puts the health care of the community at risk.

The Emergency Department is the "ground zero" for the overcrowding crisis. However, it should not be a place of convergence for victims of a mass disaster, which may occur if mechanisms are not in place to deal with emergencies. A sound plan will meet the disaster at its location, with emergency medical field teams and equipment. There will also be that ability to provide effective triage and decontamination, so that the disaster is not transferred *en mass* to the hospital.

The four phases of an integrated emergency management plan are:

- 1) Mitigation (prevention of all disasters through risk and vulnerability assessment)
- 2) Preparedness measures (as part of an integrated emergency management plan which includes community and public health agencies)

- 3) Practiced response (rehearsed and coordinated drills have prepared participants)
- 4) Recovery (returning to normal).

JCAHO has implemented significant changes in their standards that reflect a shift from emergency preparedness to emergency management as described above. This more "active" approach mandates regular community-wide drills and operational protocols for responding to a disaster and includes a more thorough assessment of regional hazards unique to each community. It also mandates a more integrated effort between hospitals and public health agencies for surveillance, reporting, and treatment programs. It establishes a hospital-based command system to coordinate the response (the HEICS, or Hospital Emergency Incident Command System).

These "ten C's" address the critical emergency plan aspects:

- 1) Charge (who activates a plan and takes operational control?)
- 2) Command and Control (establishing chain of command)
- 3) Communication (mechanisms should be tested and redundant)
- 4) Coordination (between all participants)
- 5) Convergence (where are the points of control?)
- 6) Contamination (who can treat contaminated patients?)
- 7) Capacity (awareness of institution and overall capabilities)
- 8) Cooperation (between various agencies)
- 9) Chaos (anticipating potential breakdowns and problems)
- 10) CISD: Critical Incident Stress Debriefing (addresses post-event recovery and community-wide process education)

The real issue with a disaster plan isn't (as one might suppose) when to activate it, but rather how to insure that it is soundly designed, effective, and well rehearsed. In other words, will the disaster plan allow emergency providers to save lives? Activation of a plan should provide intra- and inter-institutional support in the form of personnel, supplies, bed capacity, community surveillance and a planned response. Moreover, it should be capable of a phased or graded response that is commensurate with the magnitude of the disaster.

Obstacles to activation of a disaster plan include budget constraints, cooperation in sharing information between agencies, and a willingness to admit that one department or hospital can't handle a potential crisis. However, the return on investment may be tremendous in terms of saving the lives and preserving the integrity of the communities in which people live.

EMTALA: An Everyday Violation

Michael R. Callahan, JD

*Partner, Katten, Muchin, Zavis, Rosenman
Chicago, Illinois*

- EMTALA mandates adequate care for every patient even in the event of a disaster.
- Revisions in EMTALA reflect greater tolerance of difficulties in a hospital's capability.
- Documentation of a good faith effort is important.

The Emergency Medical Treatment and Active Labor Act (EMTALA) was passed in 1986 as part of the Consolidated Omnibus Budget Reconciliation Act (COBRA). EMTALA requires hospitals to screen and stabilize (and transfer if necessary) all who present for emergency care, regardless of the ability to pay for this service. Hospitals are required to develop policies and procedures that outline how they will achieve this capacity on an ongoing basis. When EMTALA citations occur, they almost always stipulate that a hospital hasn't followed its own rules.

EMTALA is triggered when the prudent layperson believes his situation to be a medical emergency. There is no exception to EMTALA in the event of a natural disaster or bioterrorism event. There must be well-designed plans in place to insure that all patients can be served appropriately and efficiently. Recent disasters, both man-made and natural, have provided experiences from which many hospitals have learned important lessons. One example is the notion that the response to an emergency should be scalable, that is, measured to the scope and magnitude of the emergency itself.

There is more flexibility inherent in the revised guidelines: a key to compliance is the hospital's documentation of their efforts in managing a deficiency that has or might become apparent in an emergency situation. This is true particularly when a problem has limited the hospital's ability to respond in a normal fashion. In this situation, it is important to demonstrate that there are efforts being made to give appropriate care or find alternatives that serve to optimize patient outcome.

JCAHO's Approach to Crowding

Dennis O'Leary, MD

*President,
Joint Commission on Accreditation of Healthcare Organizations
Oakbrook Terrace, Illinois*

- The public and Congress must hear the message of the current health crisis.
- Emergency care is becoming central to health care delivery in this country.

The Emergency Department today is the safety net for the safety net. It is the only source for healthcare that is always available to everyone, the ultimate refuge. Moreover, it has become the place for one-stop shopping for many patients' needs. Patients expect any and all of their problems to be addressed in one setting (and they often are). Inability to pay does not prevent access to health care in this setting. As such, the Emergency Department is seen by increasing numbers of persons as the simplest and most desirable place for obtaining healthcare.

Emergency Department overcrowding is creating tangible patient dangers, but these problems are, as of yet, largely undocumented. Overcrowding exacerbates vulnerabilities in the health care system, such as the current nursing shortage. It is important to gather data on adverse events and patient safety issues in the hospital in order to identify where we are in this crisis and where we might be headed. This will allow health care providers to approach lawmakers such as Congress to provide assistance.

Plans for increasing efficiency in the present system, such as using a "bed czar" to find hospital beds, may help temporarily, but more substantive changes must occur. There are, as of yet, no universal or easy answers. Patient capacity must increase, new approaches to ongoing problems must be found, and new funding sources must be created. The challenge now is to carry the message of this resource shortage to the public.

The Emergency Department of the future will be part of an integrated health care delivery system. Similarly, an effective disaster plan involves integrated communities and resources, not just individual hospitals. Powerful, long-term forces are shaping the way that health care is delivered. Creative solutions may place Emergency Departments at the center of a system that is prepared both for overcrowding and disasters.

**Toward Sustainable Hospital Capacity Solutions:
Top Ten Initiatives for Dramatic Results in Six Months**

Michael Hill, MD, FACEP

*President and CEO, EMPATH
Richmond, California*

- Better health care and capacity are not dependent on more beds and more money, but on a redesign of the present system.
- Top-performing hospitals work like top-performing corporations.
- Top hospitals utilize team-based care and automatic back-up systems that tolerate surges.
- Healthcare personnel that are accountable for their performance are dependable and efficient.

Variability in the delivery of healthcare is only one problem causing the current overcrowding crisis. Inconsistency in how tasks are handled and poor communication between providers and departments are two issues that create problems within many hospitals. There is also the reluctance for the ownership of patient care, that is, personnel are often not made to be responsible for their performance. In addition, there are few available back-up systems. As a result, present systems are inefficient and are prone to break down in the face of stress.

An important step to achieving better patient care is to make personnel responsible for key patient care processes. Feedback systems that measure performance can indicate when back-up systems must be implemented. The pull system can be used to enhance efficient patient care. In a pull system, the person assuming responsibility for a patient "pulls" that patient to the next step in a timely fashion. For example, the ICU charge nurse is responsible for admitting the emergency patient to her unit within a specified time period, rather than the emergency nurse trying to "push" the patient to this in-patient unit. Pull systems work far better than do push systems, and they are less likely to break down in the face of overcrowding or other stressors. The pull system also produces a more consistent and efficient hand-off of information, such that a transition that is vulnerable to breakdown becomes more consistent and predictable.

Top-performing hospitals have a system of team-based care with back-up plans hard-wired into the system. The plans allow the institution to tolerate surges in patient volume. Such a system monitors outcomes continuously, giving feedback that allows

activation of back-up plans, as necessary. Pre-planning is one of the strengths of this system. The number of patients presenting to each hospital each day is surprisingly predictable, making staffing decisions more efficient. Therefore, top-performing hospitals, like top-performing corporations, tend to utilize fewer personnel in providing patient care.

Team-based care and continuous monitoring of performance are important to improvement. Personnel perform as a team in each department and self-monitor in an open, democratic atmosphere. Metrics-driven management means performance data from all areas of the hospital are monitored and reviewed weekly by all personnel. After key goals are developed, the steps necessary to reach these goals are built into the system.

All areas of the hospital are improved by concepts of defined expectations, performance indicators, and ownership of patient care. Automation of processes also streamlines care. Decreased variability in hospital processes allows for a more efficient utilization of hospital resources, causing less frequent breakdowns in patient flow. The result of such an effort is increased capacity without having to provide major expenditures in creating new patient beds.

Better patient care and increased revenue are the result of increased and efficient patient care capacity. Such improvements "pay for themselves". Within a period of months, there is the opportunity for tremendous improvement in hospitals that implement these types of system changes.

Practical Tools for Collaboratively Managing Hospital Demand Capacity

Linda K. Kosnik, RN, MSN

Chief Nursing Officer, Overlook Hospital, Atlantic Health System Summit, New Jersey

- Team-centered decision-making improves communication and performance.
- This improves patient and employee satisfaction, and the quality of health care.
- The focus needs to be on accountability, self-monitoring and collaboration.

Improvements in hospital capacity and efficiency begin with improving communication between employees. This is done in sessions designed to generate feedback regarding operational problems in the hospital. Crew Resource Management, developed by the aviation industry to reduce crashes, can be applied in the hospital setting to improve communication and decision-making. A democratic atmosphere prevails in which team members define problems and generate ideas. The individual is part of a team (a microsystem) that is integral to the smooth function of the hospital (a macro system); thus, the process fosters accountability and pride.

This collaborative approach to demand/capacity decision-making produces more consistent and resilient day-to-day operations. A tracking system that monitors specific processes in the Emergency Department and the entire hospital in real time provides feedback and allows adaptation to changes in demand. Key stressors that cause problems (such as patient admission delays) are fixed through collaborative effort, codified into guidelines, and realized in improved performance. Health care workers are made to feel they are partners in the success, which encourages further improvement. This microsystem/macrosystem model is adaptable and may also be applied to a community of institutions.

Bioterrorism: The Challenges of a Public/Private Partnership

Originally prepared by:

Joseph Waeckerle MD, FACEP

*Clinical Professor,
University of Missouri School of Medicine
Leawood, Kansas
Editor Emeritus, Annals of Emergency Medicine
Medical Officer for the Kansas City Division of the FBI*

Presented by:

Moses Lee, MD, FACEP

*Medical Director, Illinois Medical Emergency Response Team
EMS Medical Director, Stroger Cook County Hospital
Chicago, Illinois*

- Our health care system may be vulnerable to bioterrorism.
- Local communities must be more self-reliant and capable of an effective first response to a disaster.
- A sound bioterrorism threat response strategy involves community-wide cooperation.

The community-based medical systems of this country are critical for the initial recognition and management of a bioterrorism event. Although the local emergency personnel are the first responders, limited funding and training at this level remains an obstacle to adequate preparedness. Local and state governments do not have the resources to fully fund planning and training for disaster preparedness, and federal funding is as of yet not available. Previous disasters have shown that there are deficiencies in our planning and preparation, and that our current strategies may be inadequate. A coordinated, overall community response is made more difficult because of inter-agency differences and the lack of health care facility integration.

The lack of a coordinated response may be our greatest vulnerability. It is crucial that local and federal authorities work together effectively, particularly in strategic planning. This should improve as federal agencies coalesce under a single Homeland Security Office and the national response strategy becomes better integrated at both the local and national levels.

Local communities must be more self-reliant. Illinois is better prepared than most states because of a cohesive EMS system and a proactive Public Health Department that promotes many efforts.

Our public health system is fragile, and our ability to identify a bioterrorism threat is inadequate. Thus, our ability to handle a bioterrorism crisis is questionable. Each type of disaster poses unique threats and different defense strategies. There is no single "holistic" biodefense doctrine. Bioterrorism weapons, in contrast to nuclear, chemical, and toxic threats, carry infectious disease concerns. Such a disaster may cripple the health care system with large numbers of ill and worried patients rather than large numbers of casualties. The socio-political and economic consequences of such a scenario are potentially high.

The focus in bioterrorism disaster planning must be on early detection of the event and early diagnosis of the causative agent. Health care workers are encouraged to have a low threshold for reporting suspicious illnesses. Our path ahead is like a road that is being built without knowing the landscape or the best materials to use for the project. It is uncharted territory for which we must aggressively plan and prepare.

Conclusions

Some of the most important issues facing Emergency Departments and our country's overall health care are overcrowding and the possibility of bioterrorism. Although there may have been many questions raised for which there are no clear answers, the awareness and subsequent discussion of these issues is crucial in meeting the needs of the populace and the threats to our public health. Strategic planning that re-vision's how health care is delivered is central to our mission. In these uncertain times, the participation of all healthcare providers, public health officials, and political leaders will be the key to our success.