

**MEMORANDUM**

**TO:** Affiliated Facilities and Providers  
**FROM:** Kelli E. Olson, Locum Tenens Specialist  
**DATE:** February 2009  
**RE:** March 2009 Monthly Travel Theme

A handwritten signature in cursive script that reads "Kelli Olson".



March is American Red Cross Awareness month, and keeping that in mind, our monthly travel theme for March focuses on disaster preparedness plans. One is "Emergency Department Planning and Resource Guidelines" from the ACEP, the other "Introduction to Disaster Planning: The Scope and Nature of the Problem" is from E Medicine. We hope you find this information useful for your Emergency Department.

KEO

eMedicine Specialties > Emergency Medicine > Emergency Medical Systems

## Disaster Planning

**Craig A Goolsby, MD**, Staff Physician, Department of Emergency Medicine, Wilford Hall Medical Center, Lackland AFB

**Jerry L Mothershead, MD**, Medical Readiness Consultant, Medical Readiness and Response Group, Battelle Memorial Institute; Advisor, Technical Advisory Committee, Emergency Management Strategic Healthcare Group, Veteran's Health Administration; Adjunct Associate Professor, Department of Military and Emergency Medicine, Uniformed Services University of the Health Sciences

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### Introduction to Disaster Planning: The Scope and Nature of the Problem

A disaster occurs somewhere in the world almost daily; however, to most people, disasters of the type discussed in this article are unusual events. A recent group of disasters, starting with the September 11th terrorist attacks and continuing through the tsunami affecting countries throughout the Indian Ocean, the South Asia earthquake in Pakistan, and the 2005 and 2008 Gulf Coast hurricanes have focused people's attention upon this topic.

Despite the increase in general awareness with recent events, the relative infrequency of major catastrophes affecting defined populations, leads to a certain degree of complacency and underestimation of the impact of such an event. The result of complacency is relative reluctance to devote the necessary resources for adequate disaster preparedness. Indeed, several authors note that the best time to propose major changes for disaster preparedness, including its funding, is immediately following a major disaster, even if the event has occurred in a remote location.

In the United States, large multiple-casualty events are exceptionally rare by world standards. Only 10 disasters in US history have resulted in more than 1000 fatalities (see Table 1). The vast majority of major events have resulted in fewer than 40 fatalities. According to data from the Centers for Disease Control and Prevention, the September 11th attacks caused 2819 deaths. Compared with 44,065 deaths from motor vehicle accidents in 2002, this number is small. However, the dramatic nature of disasters, with a relatively large death toll and psychological impact for a short time period can overwhelm an unprepared health and response system.

Table 1. US Disasters With Greater Than 1000 Casualties\*

Year	Event	Deaths
1865	Steamship explosion	1547
1875	Forest fire, Wisconsin	1182
1889	Flood, Pennsylvania	>2000
1900	Hurricane, Texas	8000
1904	Steamship fire	1021
1906	San Francisco earthquake	>3000
1928	Hurricane, Florida	2000
1941	Pearl Harbor Attack	2403
2001	September 11 Attack	2819
2005	Hurricane Katrina	>1300**

\*Exact death tolls can be difficult to calculate, and some of these numbers are estimates.

\*\*Even in modern times, death tolls can be difficult to establish. Debate still exists about the actual number of people who died during Hurricane Katrina and its aftermath. An article by Brunkard et al published in *Disaster Medicine and Public Health Preparedness* in August 2008, puts the Louisiana death toll at 971 plus another 15 deaths among evacuees.<sup>1</sup> An Associated Press article from 2006 claims the total number of bodies recovered from Louisiana and Mississippi was more than 1300.<sup>2</sup> There is also ongoing investigation into the possibility that the storm caused deaths during subsequent months and years due to myriad causes (eg, inadequate medical care,

relocation stresses).

When a disaster strikes, the general population expects public service agencies and other branches of the local, state, or federal government to rapidly mobilize to help the injured and the community in general. Preservation of life and health are of paramount importance to those individuals injured in the disasters. For this reason, medical professionals must be included in all phases of disaster planning, as well as in the immediate response to these events. Adequate preparation has become particularly important following the problematic response seen during Hurricane Katrina.

## Classifying Disasters

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### Natural versus technological disasters

Disasters are classified in a variety of ways. A common system divides incidents into natural and technological (human-made) disasters. For planning purposes, this distinction provides little conceptual help as there are frequent crossovers. For example, artificial structures may collapse as the result of hurricanes or earthquakes. During Hurricane Katrina, emergency personnel had to contend with fires while rescuing people from flooded areas.

Certain generalizations, however, may be made about natural disasters. Tornadoes may be quite lethal but are generally short-lived. Hurricanes cut a wider swath than tornadoes, tend to last longer, and have more long-term recovery effects. Tornadoes, hurricanes, and floods tend to occur in certain geographic locations. Volcanoes also may be quite lethal but have become more predictable in recent years. Until recently, the most devastating natural phenomena, with regard to numbers of fatalities, were thought to be earthquakes. However, the December 2004 tsunami affecting countries throughout the Indian Ocean, with an official death toll of 224,228 people, ranks as one of the most lethal disasters in recorded history.

Technological disasters tend to be more contained but can be quite lethal. Fires have caused some of the largest numbers of casualties in this country. Toxic spills (ie, release of cyanide gas in Bhopal, India) and nuclear mishaps (ie, Chernobyl) have caused short- and long-term havoc, death, and destruction.

### War and terrorism

Other incidents with potential for mass casualties and disaster include war and terrorism. Since the 9/11 attacks on the World Trade Center in New York City, terrorism has become a major focus of disaster response and preparedness. Although the world has yet to experience a terrorist-related nuclear disaster, the raw materials and technology exist to develop nuclear devices as small portable units such as "dirty-bombs." No geographical location is immune from the devastating effects of terrorism. These activities have become more frequent and lethal in recent years with no forewarning, as evidenced by the 9/11 attacks, the Madrid and London bombings, and the more distant, but still tragic, Sarin nerve agent attack on the Tokyo subway system.

### Classifying disasters

Disasters are often classified by the resultant anticipated necessary response.

- A Level I disaster is one in which local emergency response personnel and organizations are able to contain and deal effectively with the disaster and its aftermath.
- A Level II disaster requires regional efforts and mutual aid from surrounding communities.
- A Level III disaster is of such a magnitude that local and regional assets are overwhelmed, requiring statewide or federal assistance.

### Disaster preparation

Various methods have been developed to assist planners in disaster preparation. One such method is a modification of the Injury Severity Score. It is based on cause and effect, the area involved, the number of casualties, and other parameters. The potential injury creating event (PICE) system is designed to identify common aspects of a disaster and of response capabilities. Such systems are especially valuable tools in planning for disaster mitigation.

The PICE system uses 4 modifiers to describe a particular disaster (see Table 2). The first modifier describes the potential for additional

casualties. The second identifies the degree to which local resources are disrupted. The third modifier identifies the geographic boundaries of involvement. The final modifier, crisis staging, indicates the likelihood of needing outside assistance to augment or replace local resources. It is important to note that in the PICE methodology, identical disasters may have differing descriptors depending on the location of the event and the availability of resources.

Table 2. Potential Injury-Creating Event Algorithm

<b>A</b>	<b>B</b>	<b>C</b>	<b>Stage</b>
Stable	Static	Local	0
Dynamic	Disruptive	Regional	I
	Paralytic	National	II
		International	III

## Definitions and Terminology

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Disaster medicine is difficult to conceptualize. It can be broadly defined.

The World Health Organization defines a disaster as a "sudden ecological phenomenon of sufficient magnitude to require external assistance." The American College of Emergency Physicians (ACEP) states that a disaster has occurred "when the destructive effects of natural or man-made forces overwhelm the ability of a given area or community to meet the demand for health care." Other definitions exist, but the common denominator calls for a disruption of such magnitude that the organization, infrastructure, and resources of a community are unable to return to normal operations following the event without outside assistance.

To further clarify the contrast between normal emergencies and disasters, ACEP states, "emergency medical services routinely direct maximal resources to a small number of individuals, while disaster medical services are designed to direct limited resources to the greatest number of individuals."

In contrast to disasters, multiple casualty incidents (MCIs) have as their primary effects morbidity and mortality to individuals, while the community infrastructure remains relatively intact. A passenger train accident with 500 injured or dead occupants is considered an MCI. However, if this morbidity and mortality were the result of the release of chlorine gas from a hazardous material accident, a much higher potential for additional casualties would exist. Normal operations and activities of daily living would be disrupted for a longer period, which would be considered a disaster by most experts.

## Phases of Disaster Response

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A disaster cycle has 4 phases, and all responses must pass through each: (1) mitigation, (2) planning, (3) response, and (4) recovery. Pitfalls during transitions can occur throughout the phases. Generalized awareness, proper planning, and contingencies may reduce the overall effect of any specific inadequacy in response.

### Mitigation

In certain cases, some of the devastating effects of disasters can be reduced before the actual event. For example, evacuations may be orchestrated before hurricanes or floods. Early warning allows residents to seek shelter from tornadoes. Sprinkler systems in businesses and homes can reduce overall risk of total fire destruction.

### Planning

Disaster planning is discussed more thoroughly in External and Internal Planning. It cannot be stressed enough, however, that a disaster plan is not synonymous with disaster planning. Many communities have detailed, "paper" plans, which, when tested, are found to be either based on faulty assumptions or to be totally unworkable in the context of the initial response.

### Response

A number of events occur during initial response to a disaster. If there is forewarning, certain aspects of the response may take place

even before the event. Unfortunately, significant forewarning is rare.

## **Activation**

### **Notification and initial response**

During this phase, organizations involved in disaster response and the potentially affected populations are notified. In the event that the disaster is anticipated, this phase takes place even before the disaster. Many locations in hurricane areas require more than 24 hours for full evacuation.

### **Organization of command and scene assessment**

Once the activation phase has begun, the prearranged command and staff structure (for details, see Incident Command System below) for responding to the disaster should be arranged and initial communications nets established. This is one of the most crucial steps to take once the disaster occurs. Historically, valuable time may be lost during a disaster response while the central system coordinating the response effort is being prepared. During this phase, initial reports leading to overall scene assessment begin to arrive. For static disasters, required response assets may need to be determined. Often, the only initially known fact is that the disaster is an ongoing process. However, even this fact is important in determining whether outside assistance is needed, leading to timely activation of those resources.

## **Implementation**

### **Search and rescue**

Depending on the structure and function of the incident command system (ICS), search and rescue may fall under the direction of fire, emergency medical service (EMS), or police (security) forces. In contained, geographically localized incidents, the search and rescue effort is fairly straightforward. In larger disasters, especially ones that are ongoing or may involve terrorist activities, a cooperative approach is necessary and the very act of search and rescue must be highly organized to ensure adequate and complete coverage of all areas.

### **Extrication, triage, stabilization, and transport**

Extrication has evolved into a fire services function in most of the country. In addition to specialized technical and trench rescue teams, fire services have more experience with building collapse and secondary hazards (eg, floods, fires) than other organizations.

The concept of triage involves providing the most help for as many as possible. A complete description of triage is beyond the scope of this review. Medical personnel are accustomed to providing extensive, definitive care to every patient. When confronted by numerous patients simultaneously in a disaster situation, it is easy to become overwhelmed, even for an experienced disaster worker. Triage must occur at multiple levels, and patients must be reassessed during every step of the process.

Transport must be both organized and orchestrated to equitably distribute victims to capable receiving facilities. During recent civilian disasters and even in Operation Desert Storm, the majority of critically injured individuals were taken to only one or two receiving facilities, which were almost overwhelmed. This occurred at a time when other facilities sat dormant awaiting patients.

### **Definitive scene management**

While scene control and containment may be relatively simple in a local, static disaster, dynamic disasters and those that paralyze response systems may take several days to contain and stabilize. As the length of time of the disaster increases, additional resources must be made available, as rescue crews reach exhaustion, supplies are depleted, and additional hazards develop.

## **Recovery**

The recovery phase is frequently underemphasized in disaster plans, but it is crucial for the affected community. During this phase, some semblance of order is restored, public utilities are reestablished, and infrastructure begins to operate effectively. Scene withdrawal and a return to normal operations usually occur simultaneously. Treatment of the responders is also vitally important during this phase for critical incident stress debriefing and other support services that have evolved for this purpose.

## **Debriefing**

Valuable lessons may be learned during debriefing. It is of utmost importance to obtain as much information as possible from all parties

involved in the disaster response effort. Without full disclosure, similar weak responses will impede future efforts.

## External and Internal Planning

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### External planning

Disaster planning should to the extent possible incorporate formal disaster research findings. Disaster plans sometimes rely on faulty assumptions that do not prove true in actual disasters. For example, planners may logically assume that the sickest patients will be transported first during a disaster, when, in reality, this may not happen in many instances.

A disaster plan encompassing both local and regional areas must focus on 3 possible scenarios:

1. The disaster occurs within the region and is confined and controlled with existing resources.
2. The disaster occurs in a neighboring region, and regional assets are requested through mutual aid agreements.
3. The disaster area is the region and requires state or federal assistance for an effective response.

### Incident command system

After a series of fires in California in the 1970s, the Fire Suppression Services developed the ICS concept to organize an effective response to major disasters. The ICS structure includes 5 functional units: command, operations, logistics, planning, and finance (see Media file 1). Most disaster plans include similar organizational structures that are often modified depending on normal operations of the various agencies.

In developing a disaster plan, leaders should remember that it is impossible to plan for all contingencies; therefore, plans must be relatively general and expandable. Most disasters that can be contained using local or regional resources have fewer than 100 fatalities and fewer than 500 major casualties. If plans are developed for larger-scale disasters, the plan should focus on the first 48 hours of the disaster until state and federal assistance teams can arrive and to address high initial fatality rates during the first 24 hours.

### Rehearsal

All phases of the disaster response must be addressed in a disaster plan. Functional job descriptions and responsibilities of all agencies and organizations involved should be delineated clearly. More importantly, these plans should be exercised and rehearsed. The ideal exercise includes participation by all parties involved. Since these exercises, by their very nature, disrupt normal operations and are costly in personnel and material utilization, disaster agencies frequently conduct a proxy exercise on the "tabletop." This is a simulation of an emergency situation for training and testing plans and procedures that does not involve movement of response resources. Tabletop exercises are good training tools because they allow people in leadership positions to work through major problems without the cost of running vehicles, using staff and volunteer time, or using supplies. They can quickly highlight areas of weakness where additional support may be needed.

### Organization

As part of the Federal Response Plan, the National Disaster Medical System was developed in the 1980s by the Department of Defense, the Veteran's Administration, the Federal Emergency Management Agency, and the Department of Health and Human Services. The Federal Response Plan calls for the development and response of up to 12 functional units to assist, but not direct, the disaster response initiative on declaration of a state of emergency by a territory or state government.

Approximately 1000 stateside beds were identified in preparation for Desert Storm, although no simulation exercise was performed, leading to criticism from the Government Accounting Agency. Disaster medical assistance teams (DMATs) are groups composed of volunteer physicians, nurses, EMS personnel, and others who are transported to disaster sites to participate in the triage, stabilization, transport, and treatment of patients. As examples of use of these teams, DMATs responded to the Oklahoma City Federal Building bombing, Hurricane Katrina, and have prestaged at certain critical events, such as the Atlanta Olympic Games.

### Internal planning

Hospital disaster planners must take into account the scenarios previously described, including the possibility that the disaster may involve the hospital. For such rare events, aspects of hospital involvement such as mass decontamination, multiple triage and staging areas within the confines of the hospital, recall of critical personnel, and provisioning of adequate supplies and resupply must be anticipated. The Joint Commission (formerly Joint Commission on Accreditation of Hospitals [JCAHO]) requires hospitals to exercise

disaster plans periodically and to form disaster committees. These committees should comprise key departments within the hospital, including administration, nursing services, security, communications, laboratory, physician services (including, but not limited to, Emergency Medicine, General Surgery, and Radiology), medical records, and maintenance/engineering.

The hospital disaster plan should include protocols and policies that meet the following needs:

- Recognition and notification
- Assessment of hospital capabilities
- Personnel recall
- Establishment of a facility control center
- Maintenance of accurate records
- Public relations
- Equipment resupply

New, more stringent requirements for health care organizations were approved by the Joint Commission in 2000 and went into effect in 2001. Probably most significant are the requirements to integrate hospital disaster planning into community plans, to ensure that disaster programs address all phases of the disaster cycle, and to have the capability to evacuate the entire hospital staff and patients and relocate and operate from an independent facility. Discussions are continuing with the Joint Commission to further strengthen requirements concerning decontamination, polices, and training in response to terrorist activities involving chemical, biological, radiological, nuclear, and explosive agents.

## Summary

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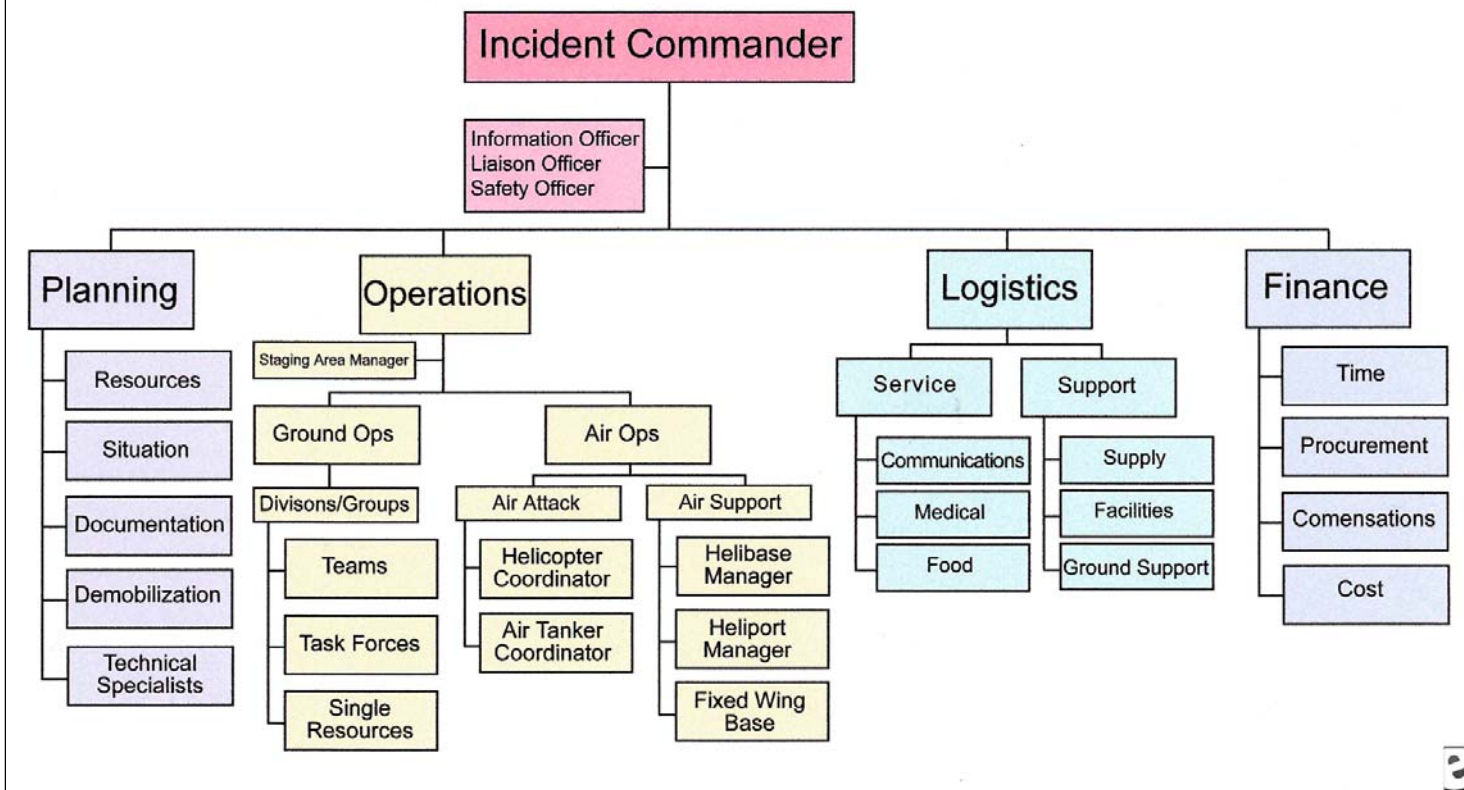
Disaster planning is a regional effort. Every jurisdiction should plan for MCIs and disasters. All plans must be simple and based on normal daily operations of the various components involved in the disaster plan. Personnel potentially involved must be familiar with the disaster plan. It should be exercised frequently, even if only by tabletop exercises. Contingency plans for mutual assistance and state or federal response also must be considered and reviewed.

## Multimedia

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# Incident Command System



Media file 1: Incident command system organizational chart.

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## Keywords

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disasters, natural disasters, catastrophe, cataclysmic episode, technological disasters, human-made disasters, tornadoes, hurricanes, earthquakes, fires, toxic spills, nuclear mishaps, war, terrorism, potential injury creating event system, PICE system, multiple casualty incidents, MCIs, incident command system, ICS, Federal Response Plan, National Disaster Medical System, disaster medical assistance teams, DMATs, Marine Corps Chemical and Biological Immediate Response Team, CBIRT

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## Contributor Information and Disclosures

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### Author

**Craig A Goolsby, MD**, Staff Physician, Department of Emergency Medicine, Wilford Hall Medical Center, Lackland AFB  
Craig A Goolsby, MD is a member of the following medical societies: Alpha Omega Alpha and American College of Emergency Physicians

Disclosure: Nothing to disclose

### Coauthor

**Jerry L Mothershead, MD**, Medical Readiness Consultant, Medical Readiness and Response Group, Battelle Memorial Institute; Advisor, Technical Advisory Committee, Emergency Management Strategic Healthcare Group, Veteran's Health Administration; Adjunct Associate Professor, Department of Military and Emergency Medicine, Uniformed Services University of the Health Sciences  
Jerry L Mothershead, MD is a member of the following medical societies: American College of Emergency Physicians and National Association of EMS Physicians

Disclosure: Nothing to disclose

### Medical Editor

**Dana A Stearns, MD**, Assistant Director of Undergraduate Education, Department of Emergency Medicine, Massachusetts General Hospital

Dana A Stearns, MD is a member of the following medical societies: American Academy of Emergency Medicine and American College of Emergency Physicians

Disclosure: Nothing to disclose

**Pharmacy Editor****Francisco Talavera, PharmD, PhD**, Senior Pharmacy Editor, eMedicine

Disclosure: Nothing to disclose

**Managing Editor****A Antoine Kazzi, MD**, Chair and Medical Director, Department of Emergency Medicine, American University of Beirut, Lebanon

A Antoine Kazzi, MD is a member of the following medical societies: American Academy of Emergency Medicine

Disclosure: Nothing to disclose

**CME Editor****John D Halamka, MD, MS**, Associate Professor of Medicine, Harvard Medical School, Beth Israel Deaconess Medical Center; Chief Information Officer, CareGroup Healthcare System and Harvard Medical School; Attending Physician, Division of Emergency Medicine, Beth Israel Deaconess Medical Center

John D Halamka, MD, MS is a member of the following medical societies: American College of Emergency Physicians, American Medical Informatics Association, Phi Beta Kappa, and Society for Academic Emergency Medicine

Disclosure: Nothing to disclose

**Chief Editor****Barry E Brenner, MD, PhD, FACEP**, Professor of Emergency Medicine, Professor of Internal Medicine, Program Director, University Hospitals, Case Western Reserve University School of Medicine

Barry E Brenner, MD, PhD, FACEP is a member of the following medical societies: Alpha Omega Alpha, American Academy of Emergency Medicine, American College of Chest Physicians, American College of Emergency Physicians, American College of Physicians, American Heart Association, American Thoracic Society, Arkansas Medical Society, New York Academy of Medicine, New York Academy of Sciences, and Society for Academic Emergency Medicine

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## *Emergency Department Planning and Resource Guidelines*

Revised and approved by the ACEP Board of Directors October 2007, June 2004, and June 2001 titled, "Emergency Department Planning and Resources Guidelines"

Reaffirmed by the ACEP Board of Directors September 1996

Revised and approved by the ACEP Board of Directors June 1991

Originally approved by the ACEP Board of Directors December 1985 titled, "Emergency Care Guidelines"

The purpose of this policy is to provide an outline of, as well as references concerning the resources and planning needed to meet the emergency medical care needs of the individual and the community.

Emergency departments\* must possess the staff and resources necessary to evaluate all individuals presenting to the emergency department (ED). Emergency departments must also be able to provide or arrange treatment necessary to attempt to stabilize emergency patients who are found to have an emergency medical condition. Because of the unscheduled and episodic nature of health emergencies and acute illnesses, experienced and qualified physician, nursing, and ancillary personnel must be available 24 hours a day to serve those needs.

Emergency departments also provide treatment for individuals whose health needs are not of an emergency nature, but for whom EDs may be the only accessible or timely entry point into the broader health care system. Accessing an ED for care is an option exercised by patients seeking quality and service availability.

The American College of Emergency Physicians (ACEP) believes that:

- Emergency medical care must be available to all members of the public.<sup>1</sup>
- Access to appropriate emergency medical and nursing care must be unrestricted.
- A smooth continuum should exist among prehospital providers, ED providers, and providers of definitive follow-up care.<sup>2</sup>
- Evaluation, management, and treatment of patients must be appropriate and expedient.<sup>1</sup>
- Resources should exist in the ED to accommodate each patient from the time of arrival through evaluation, decision making, treatment, and disposition.

\* These guidelines are intended to apply to either hospital-based or free-standing emergency departments open 24 hours a day.

- EDs should have policies and plans to provide effective administration, staffing, facility design, equipment, medication, and ancillary services.
- The emergency physician, emergency nurse, and additional medical team members are the core components of the emergency medical care system. These ED personnel must establish effective working relationships with other health care providers and entities with whom they must interact.<sup>1</sup> These include emergency medical services (EMS) providers, ancillary hospital personnel, other physicians, and other health care and social services resources.

**Policy sections include:**

1. Resources and Planning

- A. Responsibilities and Public Expectations
- B. Necessary Elements
  - 1. Administration
  - 2. Staffing
  - 3. Facility
  - 4. Equipment and Supplies (See also Figure 1)
  - 5. Pharmacologic/Therapeutic Drugs and Agents (See also Figure 2)
  - 6. Ancillary Services (See also Figures 3 and 4)
- C. Relationships and Responsibilities

2. Figures

- A. Suggested Equipment and Supplies for EDs
- B. Suggested Pharmacological/Therapeutic Drugs for EDs
- C. Radiological, Imaging, and other Diagnostic Services
- D. Suggested Laboratory Capabilities
- E. References

**1. Resources and Planning**

**A. Responsibilities and Public Expectations**

1. EDs should be staffed by qualified personnel with knowledge and skills sufficient to evaluate and manage those who seek emergency care. EDs should be designed and equipped to facilitate this work.
2. Timely emergency care by an emergency physician and emergency nursing staff physically present in the ED<sup>3</sup> must be continuously available 24 hours a day, seven days a week.
3. Emergency patient evaluation and stabilization must be provided to each individual who presents for such care.<sup>4</sup> Consistent with applicable standards and regulations, the patient or applicable guarantor is financially responsible for the charges incurred in the course of this care.

4. EDs should participate in active public education program that details the intended scope of services provided at the facility.<sup>1</sup>
5. EDs should support existing EMS systems and provide medical direction where appropriate.<sup>2</sup>

## **B. Necessary Elements**

This section of the guidelines outlines elements of administration, staffing, design, and materials needed for the delivery of emergency care.

### **1. Administration**

- a. The emergency facility must be organized and administered to meet the health care needs of its patient population. A written organizational plan for the ED consistent with hospital bylaws and similar to the organizational plan of other clinical departments in the hospital should exist.
- b. Operation of the ED must be guided by written policies and procedures.
- c. The medical director of an ED<sup>1</sup>, in collaboration with the director of emergency nursing and with appropriate integration of ancillary services, must ensure that quality, safety, and appropriateness of emergency care are continually monitored and evaluated. The ED medical director should have oversight over all aspects of the practice of emergency medicine in an ED.
- d. All new staff members working in an ED should receive a formal orientation program that addresses the mission of the institution, standard operating procedures of the ED, and the responsibilities of each member of the ED staff.
- e. All emergency care personnel must maintain and enhance their professional knowledge and skills, with the goal of providing optimal care to patients.
- f. The duties and responsibilities of physicians, nurses, and ancillary staff members in the ED must be defined in writing. The ED quality assurance program should provide for the evaluation and monitoring of each member of the emergency care team at regular intervals.
- g. In accordance with applicable laws, regulations, and standards, the triage and screening of each patient who enters the facility seeking care must be performed by a physician, or by a specially trained registered nurse, nurse practitioner, or physician assistant, in accordance with the Emergency Medical Treatment and Active Labor Act (EMTALA)<sup>4</sup> policies delineated in the medical staff bylaws or by the hospital board of trustees. Policy guidelines should be developed collaboratively by the medical director of emergency services and the director of emergency nursing.
- h. Immediate evaluation and stabilization, to the degree reasonably possible, must be available for each patient who presents with an emergency medical condition.
- i. The emergency physician is responsible for the medical care provided in the ED. This includes the medical evaluation, diagnosis, and recommended treatment and disposition of the emergency patient, as well as the direction and coordination of all other care provided to the patient. Medical care responsibility for a particular patient in the ED may be transferred to another physician if said responsibility has been assumed unambiguously. A registered nurse is responsible for the nursing care of each emergency patient to include assessment, planning, and evaluation of response to interventions.

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<sup>1</sup> Where appropriate in this document, the term "chair or chief of the department of emergency medicine" may be substituted for the title "medical director of the emergency department."

- j. The ED must maintain a control register or “log” identifying each individual who presents to the facility seeking emergency care.
- k. A legible and appropriate medical record must be established for every individual who presents for emergency care. This record must be retained as required by law and should remain promptly available to the emergency staff when needed.

## 2. Staffing

- a. Appropriately educated and qualified emergency care professionals, including a physician and a registered nurse, shall staff the ED during all hours of operation.
- b. An emergency medical director shall direct the medical care provided in the ED. The medical director of the ED should:
  - Be certified by the American Board of Emergency Medicine, the American Osteopathic Board of Medicine or possess comparable qualifications as established through the privilege delineation policy.<sup>5</sup>
  - Possess competence in management and administration of the clinical services in an ED.
  - Be a voting member of the executive committee of the hospital’s medical staff.
  - Be knowledgeable about EMS operations and the regional EMS network.
  - Be responsible for assessing and making recommendations to the hospital’s credentialing body related to the qualifications of emergency physicians with respect to the clinical privileges granted to them.
  - Ensure that the emergency staff is adequately qualified and appropriately educated.
- c. All physicians who staff the ED, including the medical director, should be subject to the hospital’s customary credentialing process and must be members of the hospital medical staff with clinical privileges in emergency medicine.<sup>5</sup> Emergency physicians should have the same rights, privileges, and responsibilities as any other member of the medical staff, as outlined in the organized medical staff’s various categories of medical staff membership.<sup>6</sup>
- d. Each physician should be individually credentialed by the hospital medical staff department in accordance with criteria contained in ACEP’s policy on physician credentialing.<sup>5</sup> All emergency physicians who practice in an ED must possess training, experience, and competence in emergency medicine sufficient to evaluate and initially manage and treat all patients who seek emergency care, consistent with the physician’s delineated clinical privileges.
- e. The nursing care provided in the ED shall be directed by a registered nurse. The director of emergency nursing services should:
  - Demonstrate evidence of substantial education, experience, and competence in emergency nursing.<sup>7</sup> The Certified Emergency Nurse (CEN) credential is an excellent benchmark.
  - Show evidence of competence in management and administration of the clinical services in an ED.
  - Ensure that the nursing and support staff are appropriately educated and qualified.<sup>8</sup> Each nurse working in the ED should:

- Provide evidence of adequate previous ED or critical care experience or have completed an emergency care education program. The CEN credential is an excellent benchmark.
- Demonstrate evidence of the knowledge and skills necessary to deliver nursing care in accordance with the Standards of Emergency Nursing Practice.

f. The medical director of the ED and the director of emergency nursing must assess staffing needs on a regular basis. Patient census, injury/illness severity, arrival time, and availability of ancillary services and support staff are factors to be considered in the evaluation of emergency scheduling and staffing needs. Staffing patterns should accommodate the potential for the unexpected arrival of additional critically ill or injured patients.<sup>6</sup> A plan should exist for the provision of additional nursing, mid-level practitioners, and physician support in times of acute overload or disaster.<sup>9</sup>

### **3. Facility**

- a. The ED should be designed to provide a safe environment in which to render care and should enable convenient access for all individuals who present for care.
- b. The ED should be designed to protect, to the maximum extent reasonably possible consistent with medical necessity, the right of the patient to visual and auditory privacy.
- c. Radiological, imaging, and other diagnostic services such as those outlined in Appendix 3 must be available within a reasonable period of time for individuals who require these services.
- d. Laboratory services such as those outlined in Appendix 4 must be available within a reasonable period of time for the provision of appropriate diagnostic tests for individuals who require these services.
- e. Appropriate signs consistent with the applicable regulations and laws should indicate the direction of the ED from major thoroughfares and whether the facility is designated as a specialized emergency care center.
- f. Adequate provisions for the safety of the ED staff, patients, and visitors must be designed and implemented.

### **4. Equipment and Supplies**

- a. Equipment and supplies must be of high quality and should be appropriate to the reasonable needs of all patients anticipated by the ED.
- b. Necessary equipment and supplies such as those outlined in Appendix 1 must be immediately available in the facility at all times.
- c. Evidence of the proper functioning of all reusable direct patient care medical equipment must be documented at regular intervals.

### **5. Pharmacologic/Therapeutic Drugs and Agents**

Necessary drugs and agents such as those outlined in Appendix 2 must be immediately available. A mechanism must exist to identify and replace all drugs before their expiration dates.

**6. Ancillary Services**

- a. Lab
- b. Radiology
- c. Anesthesia
- d. Respiratory Therapy
- e. Electrocardiography

**C. Relationships and Responsibilities**

**1. Responsibilities for the Continuity of Patient Care**

Emergency care begins in the prehospital setting, continues in the ED, and concludes when responsibility for the patient is transferred to another physician or the patient is discharged. To promote optimal care of emergency patients, this transfer of responsibility should be accomplished in an effective, orderly, and predictable manner. This section describes the relationships that should exist between facilities and providers for proper continuity of care.

**a. Prehospital Setting**

- Prehospital emergency care should be provided consistent with the ACEP policy, “Medical Direction of Emergency Medical Services.”<sup>2</sup>
- EDs must be a designated part of the EMS and community disaster plans and must have roles defined by the local EMS/disaster coordinating body. Protocols and procedures should be in place defining the EDs interface with the EMS system.
- Patients should be transported to the nearest appropriate ED in accordance with applicable laws, regulations, and guidelines.<sup>10,11</sup>
- When ambulance services are used to transport patients to an ED, a communication system such as a two-way radio, cellular phone, or other appropriate means should be available to permit notice of arrival or advance information concerning critically ill or injured patients.
- Transport personnel should provide complete written clinical documentation of all prehospital care provided to the patient. A copy of the document should be immediately available on transfer of care to the staff of the ED and should be included in the patient’s permanent emergency medical record.

**b. Emergency Facility**

- ED personnel must be familiar with medical care protocols used by the prehospital providers in their community.
- All individuals with potentially lethal or disabling illnesses or injuries or other potential emergency medical conditions who present or are brought to the facility must be evaluated promptly. Appropriate measures must be initiated to stabilize and manage these patients.

**c. Patient Disposition**

- Appropriately qualified physicians who will accept responsibility for the care of patients must be identified in advance by the hospital and its medical staff for patients requiring admission<sup>12</sup> or transfer to an inpatient bed or observation/holding unit.<sup>13,14</sup> Consistent with applicable laws and regulations, the hospital and its medical staff must provide to the ED a list of appropriate “on-call” specialists who are required to respond to assist in the care of emergency patients within reasonable established time limits.<sup>4,15</sup>

- Patients admitted or transferred to an observation/holding unit should be managed in a manner consistent with guidelines specified in ACEP's related policies.<sup>13,14</sup>
- Appropriately qualified physicians or other appropriate and qualified health care professionals practicing within the scope of their licensure who will accept follow-up responsibility for patients discharged from the ED should be identified in advance by the hospital and its medical staff.  
The hospital and its medical staff must provide the ED with a list of appropriate on-call specialists or other appropriate referral services who will render follow-up services to ED patients within a reasonable period of time after discharge.<sup>15</sup>
- All patients discharged or transferred from an ED must have specific, printed, or legibly written aftercare instructions.

**d. Transfer**

- When patient transfer is indicated, the emergency facility must have a written plan for transferring patients in a vehicle with appropriate patient care capabilities, including life support (e.g., ambulance, advanced life support, basic life support, fixed-wing, rotor). When necessary, means should be available to provide nursing or physician staffing of transfer vehicles.<sup>16</sup> Medical records necessary for ongoing care must accompany the patient; if these are not available at the time of transfer, they must be expeditiously provided to the receiving facility (eg, by fax transmission).<sup>17</sup>
- Patients with potentially lethal or disabling conditions or other emergency medical conditions must not be transferred from an emergency facility unless appropriate evaluation and stabilization procedures have been initiated within the capability of the facility. Transfer of patients to a facility with a greater capability and resources should be arranged as necessary.<sup>17</sup>
- All transfers must comply with local, state, and federal laws<sup>4</sup> and be consistent with ACEP policies related to patient transfer.<sup>16,17</sup>

Figure 1

**SUGGESTED EQUIPMENT AND SUPPLIES FOR EDs**

*The equipment, instruments, and supplies listed below are only suggested. Each of the items should be located in or immediately available to the area noted. This list does not include routine medical/surgical supplies such as adhesive bandages, gauze pads, and suture material. Nor does it include routine office items such as paper, desks, paper clips, and chairs.*

**Entire Department**

- Central station monitoring capability
- Physiological monitors
- Blood flow detectors
- Defibrillator with monitor and battery
- Thermometers
- Pulse oximetry
- Nurse-call system for patient use
- Portable suction regulator
- Infusion pumps to include blood pumps
- IV poles
- Bag-valve-mask respiratory and adult and pediatric size mask
- Portable oxygen tanks
- Blood/fluid warmer and tubing
- Nasogastric suction supplies
- Nebulizer
- Gastric lavage supplies, including large-lumen tubes and bite blocks
- Urinary catheters, including straight catheters, Foley catheters, Coude catheters, filiforms and followers, and appropriate collection equipment
- Intraosseous needles
- Lumbar puncture sets (adult and pediatric)
- Blanket warmer
- Tonometer
- Slit lamp
- Wheel chairs
- Medication dispensing system with locking capabilities
- Separately wrapped instruments (specifics will vary by department)
- Availability of light microscopy for emergency procedures
- Weight scales (adult and infant)
- Tape measure
- Ear irrigation and cerumen removal equipment
- Vascular Doppler
- Anoscope
- Adult and Pediatric “code” cart
- Suture or minor surgical procedure sets (generic)
- Portable sonogram equipment
- EKG machine
- Point of care testing

- X-ray view box and hot light
- Film boxes for holding x-rays
- Chart rack
- Computer system
- Internet capabilities
- Patient tracking system
- Radio or other device for communication with ambulances
- Patient discharge instruction system
- Patient registration system/ Information services
- Intradepartmental staff communication system- pagers, mobile phones
- ED charting system for physician, nursing, and attending physician documentation equipment
- Reference materials including toxicology resource information
- Personal protective equipment- gloves, eye goggles, face mask, gowns, head and foot covers
- Linen (pillows, towels, wash cloths, gowns, blankets)
- Patient belongings or clothing bag
- Security needs –including restraints and wand-type or free standing metal detectors as indicated
- Equipment for adequate housekeeping

### **General Examination Rooms**

- Examination tables or stretchers appropriate to the area. (For any area in which seriously ill patients are managed, a stretcher with capability for changes in position, attached IV poles, and a holder for portable oxygen tank should be used. Pelvic tables for GYN examinations.)
- Step stool
- Chair/stool for emergency staff
- Seating for family members or visitors
- Adequate lighting, including procedure lights as indicated
- Cabinets
- Adequate sinks for hand-washing, including dispensers for germicidal soap and paper towels
- Wall mounted oxygen supplies and equipment, including nasal cannulas, face masks, and venturi masks.
- Wall mounted suction capability, including both tracheal cannulas and larger cannulas
- Wall-mounted or portable otoscope/ophthalmoscope
- Sphygmomanometer/stethoscope
- Oral and nasal airways
- Televisions
- Reading material for patients
- Biohazard-disposal receptacles, including for sharps
- Garbage receptacles for non-contaminated materials

### **Resuscitation Room**

All items listed for general examination rooms plus:

- Adult and Pediatric “code cart” to include appropriate medication charts
- Capability for direct communication with nursing station, preferably hands free
- Radiography equipment
- Radiographic view boxes and hot light

- Airways needs
  - Big-valve-mask respirator (adult, pediatric, and infant)
  - Cricothyroidotomy instruments and supplies
  - Endotracheal tubes, size 2.5 to 8.5 mm
  - Fiberoptic laryngoscope
  - Laryngoscopes, straight and curved blades and stylets
  - Laryngoscopic mirror and supplies
  - Laryngeal Mask Airway (LMA)
  - Oral and nasal airways
  - Tracheostomy instrument and supplies
- Breathing
  - BiPAP Ventilation System
  - Closed-chest drainage device
  - Chest tube instruments and supplies
  - Emergency thoracotomy instruments and supplies
  - End-tidal CO<sub>2</sub> monitor<sup>18</sup>
  - Nebulizer
  - Peak flow meter
  - Pulse oximetry
  - Volume cycle ventilator
- Circulation
  - Automatic physiological monitor, noninvasive
  - Blood/fluid infusion pumps and tubing
  - Blood/fluid warmers
  - Cardiac compression board
  - Central venous catheter setups/kits
  - Central venous pressure monitoring equipment
  - Cutdown instruments and supplies
  - Intraosseous needles
  - IV catheters, sets, tubing, poles
  - Monitor/defibrillator with pediatric paddles, internal paddles, appropriate pads and other supplies
  - Pericardiocentesis instruments
  - Temporary external pacemaker
  - Transvenous and/or transthoracic pacemaker setup and supplies
  - 12-Lead ECG machine

**Trauma and miscellaneous resuscitation**

- Blood salvage/autotransfusion device
- Emergency obstetric instruments and supplies
- Hypothermia thermometer
- Infant warming equipment
- Peritoneal lavage instruments and supplies
- Pneumatic antishock garment, as indicated
- Spine stabilization equipment to include cervical collars, short and long boards
- Warming/cooling blanket

### **Other Special Rooms**

All items listed for general examination rooms plus:

- Orthopedic
  - Cast cutter
  - Cast and splint application supplies and equipment
  - Cast spreader
  - Crutches
  - Extremity-splinting devices including traction splinting and fixation pins/wires and corresponding instruments and supplies
  - Halo traction or Gardner-Wells/Trippe-Wells traction
  - Radiograph view and hot light
  - Suture instrument and supplies
  - Traction equipment, including hanging weights and finger traps
  
- Eye/ENT
  - Eye chart
  - Ophthalmic tonometry device (applanation, Schiottz, or other)
  - Other ophthalmic supplies as indicated, including eye spud, rust ring remover, cobalt blue light
  - Slit lamp
  - Ear irrigation and cerumen removal equipment
  - Epistaxis instrument and supplies, including balloon posterior packs
  - Frazier suction tips
  - Headlight
  - Laryngoscopic mirror
  - Plastic suture instruments and supplies
  
- OB-GYN
  - Fetal Doppler and ultrasound equipment
  - Obstetrics/Gynecology examination light
  - Vaginal specula in pediatric through adult sizes
  - Sexual assault evidence-collection kits (as appropriate)
  - Suture material

### **Miscellaneous**

- Nitrous Oxide equipment

**Figure 2**

**SUGGESTED PHARMACOLOGICAL/THERAPEUTIC DRUGS FOR EDs**

*These classes of drugs and agents are only suggested. The medical director of the ED, representatives of the medical staff, and the director of the pharmacy should develop a formulary of specific agents for use in an individual hospital's ED.*

Analgesics  
    narcotic and non-narcotic

Anesthetics  
    topical, infiltrative, general

Anticonvulsants

Antidiabetic agents

Antidotes  
    antivenins

Antihistamines

Anti-infective agents  
    systemic/topical

Anti-inflammatories  
    steroidal/non-steroidal

Bicarbonates

Blood Modifiers  
    Anticoagulants to include thrombolytics  
    Anticoagulants  
    Hemostatics  
        systemic  
        topical  
    plasma expanders/ extenders

Burn Preparations

Cardiovascular agents  
    Ace inhibitors  
    Adernergic blockers  
    Adernergic stimulants  
    Alpha/Beta blockers  
    Antiarrhythmia agents  
    Calcium channel blockers  
    Digoxin antagonist  
    Diuretics  
    Vasodilators  
    Vasopressors

Cholinesterase Inhibitors

Diagnostic agents  
    Blood contents  
    Stool contents  
    Testing for myasthenia gravis  
    Urine contents

Electrolytes

- Cation exchange resin
- Electrolyte replacements, parenteral and oral
- Fluid replacement solutions

Gastrointestinal agents

- Antacids
- Anti-diarrheals
- Emetics and Anti-emetics
- Anti-flatulent
- Anti-spasmodics
- Bowel evacuants/laxatives
- Histamine receptor antagonists
- Proton pump inhibitors

Glucose elevating agents

Hormonal agents

- Oral contraceptives
- Steroid preparations
- Thyroid preparations

Hypocalcemia and hypercalcemia management agents

Lubricants

Migraine preparations

Muscle relaxants

Narcotic antagonist

Nasal preparation

Ophthalmologic preparations

Otic preparations

Oxytocics

Psychotherapeutic agents

Respiratory agents

- Antitussives
- Brochodilators
- Decongestants
- Leukotriene antagonist

Rh<sub>0</sub>(D) immune globulin

Salicylates

Sedatives and Hypnotics

Vaccinations

Vitamins and minerals

**Figure 3**

**RADIOLOGIC, IMAGING, AND OTHER DIAGNOSTIC SERVICES**

*The specific services available and the timeliness of availability of these services for emergency patients in an individual hospital's ED should be determined by the medical director of the ED in collaboration with the directors of the diagnostic services and other appropriate individuals.*

**The following should be readily available 24 hours a day for emergency patients:**

Standard radiologic studies of bony and soft-tissue structures including, but not limited to

- Cross-table lateral views of spine with full series to follow
- Portable chest radiographs for acutely ill patients and for verification of placement of endotracheal tube, central line, or chest tube
- Soft-tissue views of the neck
- Soft-tissue views of subcutaneous tissues to rule out the presence of foreign body
- Standard chest radiographs, abdominal series, etc

Pulmonary services

- Arterial blood gas determination
- Peak flow determination
- Pulse oximetry

Fetal monitoring (nonstress test)/uterine monitoring

Cardiovascular services

- Doppler studies
- 12-Lead ECGs and rhythm strips

Emergency ultrasound services for the diagnosis of obstetric/gynecologic, cardiac and hemodynamic problems and other urgent conditions.

**The following services should be available on an urgent basis, provided by staff in the hospital or by staff to be called in to respond within a reasonable period of time:**

Nuclear medicine

- Ventilation-perfusion lungs scans
- Other scintigraphy for trauma and other conditions

Radiographic

- Arteriography/venography
- Computed tomography
- Dye-contrast studies (intravenous pyelography, gastrointestinal contrast, etc)

Vascular/flow studies including impedance plethysmography

**Figure 4**

**SUGGESTED LABORATORY CAPABILITIES**

*The medical director of the ED and the director of laboratory services should develop guidelines for availability and timeliness of services for an individual hospital's ED. The following laboratory capabilities are suggested for hospitals with 24-hour EDs. This list may not be comprehensive or complete.*

**Blood bank**

- Bank products availability
- Type and cross-matching capabilities

**Chemistry**

- |  |   |
|--|---|
| <ul style="list-style-type: none"> <li>Ammonia</li> <li>Amylase</li> <li>Anticonvulsant and other therapeutic drug levels</li> <li>Arterial blood gases</li> <li>Bilirubin (total and direct)</li> <li>Calcium</li> <li>Carboxyhemoglobin</li> <li>Cardiac isoenzymes (including creatine kinase- MB)</li> <li>Chloride (blood and cerebrospinal fluid [CSF])</li> </ul> | <ul style="list-style-type: none"> <li>Creatinine</li> <li>Electrolytes</li> <li>Ethanol</li> <li>Glucose (blood and CSF)</li> <li>Liver-function enzymes (ALT, AST, alkaline phosphatase)</li> <li>Methemoglobin</li> <li>Osmolality</li> <li>Protein (CSF)</li> <li>Serum magnesium</li> <li>Urea nitrogen</li> </ul> |
|--|---|

**Hematology**

- |   |  |
|---|--|
| <ul style="list-style-type: none"> <li>Cell count and differential (blood, CSF, and joint fluid analysis)</li> <li>Coagulation studies</li> <li>Erythrocyte sedimentation rate</li> </ul> | <ul style="list-style-type: none"> <li>Platelet count</li> <li>Reticulocyte count</li> <li>Sickle cell prep</li> </ul> |
|---|--|

**Microbiology**

- |  |  |
|--|--|
| <ul style="list-style-type: none"> <li>Acid fast smear/staining</li> <li>Chlamydia testing</li> <li>Counterimmune electrophoresis for bacterial identification</li> <li>Gram staining and culture/sensitivities</li> </ul> | <ul style="list-style-type: none"> <li>Herpes testing</li> <li>Strep screening</li> <li>Viral culture</li> <li>Wright stain</li> </ul> |
|--|--|

**Other**

- |  |  |
|--|--|
| <ul style="list-style-type: none"> <li>Hepatitis screening</li> <li>HIV screening</li> <li>Joint fluid and CSF analysis</li> <li>Toxicology screening and drug levels</li> </ul> | <ul style="list-style-type: none"> <li>Urinalysis</li> <li>Mononucleosis spot</li> <li>Serology (syphilis, recombinant immunoassay)</li> <li>Pregnancy testing (qualitative and quantitative)</li> </ul> |
|--|--|

**Figure 5**

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