Development of a State Medical Surge Plan, Part I: The Procedures, Process, and Lessons Learned or Confirmed

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In 2003, the Utah Department of Health received funding from the Health Resources and Services Administration to develop a medical surge plan. The plan was designed to increase the number of available hospital beds in the state by 1250 beds, including 125 beds for patients with burns or trauma patients. Interested parties were contacted and a coordinating group composed of Utah Department of Health and University of Utah Health Sciences Center representatives was formed, who were responsible for developing the plan. This article is Part I of a 2-part series that discusses the planning process and identification of a group of stakeholders who served as a planning task force, and concludes with a summary of lessons learned or confirmed during the planning process. Part II will discuss the content of the medical surge plan.

In 2003, the Health Resources and Services Administration (HRSA) furnished funding to enable states to develop medical surge plans. The plans were intended to provide additional hospital beds should a terrorism event, natural disaster, or accident produce a mass casualty incident (MCI). The number of additional beds required was based on the population of the state and the HRSA formula, which required one additional bed for every 2000 residents. This resulted in a requirement of an additional 1,250 available hospital beds for the state of Utah. The 1,250 figure included beds for 125 critically injured patients or patients with burns. The Utah Department of Health (UDOH) had overall responsibility for development of the plan.

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Preliminary Activities

In late 2003, members of the UDOH developed a proposed contract to construct the plan and contacted interested parties to ascertain interest in participating. Among those contacted were members of the University of Utah Health Sciences Center (UHSC), who had participated in a series of presentations across the state in 2003 regarding terrorism agents and response planning. Each session was accomplished under auspices of the UDOH, was 2 days in length, and included a table-top exercise as

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This effort was supported by Health Resources and Services Administration FY2003 Grant No. U3RMC 00057-02-00 CFDA 93.003.

The contents of this article are the responsibility of the authors and do not necessarily reflect the official views of the Health Resources and Services Administration.

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Disaster Manage Response 2005;3:112-7.

1540-2487/$30.00

doi:10.1016/j.dmr.2005.07.003

well as presentations on terrorist agents. Information gained during the sessions would be of value in developing the surge plan, and many participants in these meetings also would be directly involved as stakeholders in any surge planning effort.

Identify Planning Resources

After considerable discussion of the scope of the plan and approaches to accomplishing the task, agreement was reached in April 2004 that UDOH and UHSC members would serve as focal points for developing the plan. It also was agreed that the template developed by the Washington State Department of Health would be used for basic aspects of the plan. As will be noted in Part II, significant modifications to this format were made as the planning process evolved. A coordinating group was formed that included disaster planning experts from UDOH (LB, JB, JW), the University of Utah Health Sciences Center's Emergency Preparedness Manager (CC), and 4 University School of Medicine faculty members: the Director of the University of Utah's Intermountain Burn Center (JS), the University's Director of Surgical Critical Care (RB), the University's Director of Trauma Care and Co-Director of the University's Intermountain Burn Center (SM), and a member who gained significant experience in writing, implementing, and evaluating emergency medical response plans during his career in the U.S. Air Force prior to coming to Utah (RM).

Identify Planning Approaches

The coordinating group developed preliminary approaches to the planning process, and members also delineated the information that would be needed from the state, hospitals, and other sources. Members met with subject matter experts to gain information on the multiple aspects to be considered in the plan. Of particular importance was identifying the stakeholders who, as a task force, would be invited to a series of meetings to develop and refine the plan.

Identify Task Force Members

Task Force members were identified and selected based on their affiliation with specific organizations (see Table 1). Such organizations would have additional resources that might be used in the event of a disaster producing mass casualties. Individuals with decision-making authority from these organizations were invited to participate through special invitations from the executive director of the Department of Health. Through this process, more than 45 representatives of hospitals, clinics, and other organizations that would be affected during an MCI were invited to the initial planning meeting. During the planning meetings, other interested parties were identified, and these individuals were invited to subsequent meetings. A few who could not attend actively reviewed the materials provided prior to and subsequent to task force meetings and provided pertinent input.

Table 1. Agencies and organizations represented in the Utah Medical Surge Planning Task Force

- Level I and II trauma centers
- Level I pediatric trauma center
- Other urban and rural hospitals
- State Hospital Association
- Poison Control Center
- Intermountain Burn Center
- Aeromedical transport
- Ambulance services
- State Department of Health
  - Health facility licensure
  - Medical examiner
  - State laboratory
  - State trauma systems manager
  - State epidemiologist
  - Health Resources and Services Administration bioterrorism coordinator
  - Centers for Disease Control and Prevention bioterrorism coordinator
  - Public information officer
  - State Emergency Medical Services director
  - Regional bioterrorism planners
- State Partners
  - Department of Emergency Services and Homeland Security
  - National Guard
  - State Transit Authority
- Federal Partners
  - Military bases
  - National Disaster Medical System coordinator
  - Veterans' Administration Medical Center
- Metropolitan Medical Response System coordinator
- Church disaster services
- Hospice
- Emergency Medical Services provider
- Community health clinics
- Local health departments
- Chamber of Commerce
- Surgi-Centers
- Urgent care clinics
- Nursing homes
- Home health

Mission, Purpose, Scope of the Plan

The coordinating group developed a mission statement as well as the purpose and scope of the plan. The mission statement emphasized that the Medical Surge Capacity Plan was to outline the steps needed to increase the state's patient bed capacity to meet the HRSA requirements. The plan was to provide information regarding initial care of patients as a result of chemical, biologic, nuclear, or trauma events and also address the support needs for caring for the additional patients, including facilities, personnel, security, communications, transportation, and equipment.

The purpose of the plan was to provide a document to use in the event of an MCI in the most populous region of the state. The plan also would serve as a template to be used by 3 other state hospital regions in developing their surge capacity plans.

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The scope of the plan was to define medical capabilities within the state, designate members of the state government and other organizations who would be responsible for implementing the plan, delineate medical direction and control, describe augmentation of capabilities for inpatients and outpatients, consider transport of patients to and from facilities, and specify communication needs. The plan would provide guidance on a standardized triage system as well as recommendations for initial treatment of patients. Among other items, the plan also would address additional legal and statutory requirements for those responding.

Development of the Planning Process

Create an initial planning process. Using the mission statement, scope, and purpose as guidelines, the coordinating group designed an initial planning development process. Members reviewed planning literature and disaster response plans of other organizations. Examples of materials reviewed are provided in the references.[1-6] In preparation for the 2002 Winter Olympics, the UDOH had surveyed all hospitals in the state to ascertain capabilities, resources, average daily bed census, and other data pertinent to responding to an MCI. This information was updated and reviewed during the planning sessions to help ensure data validity and appropriateness for inclusion in the medical surge plan.

Schedule meetings in advance. As the initial plan requirements were being decided, Task Force meetings were scheduled for May 13, 2004, (8 hours), July 9, 2004, (8 hours), and August 5, 2004, (5 hours). Prior to the first meeting, the proposed planning process and activities developed by the coordinating group would be provided to all Task Force members so that participants would have the opportunity to review the content prior to the meeting. Input from the meeting would then be included in an initial draft of the medical surge plan that would be sent prior to the second meeting. This iterative process was followed for each subsequent meeting. As the meetings occurred, it was decided that a fourth brief meeting would be held for a "Last Look and Comments" session.

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The Planning Process Development: Meetings and Intervening Actions

Initial Meeting

The May 13 meeting began with introductions and completion of confidentiality agreements. Then the group was given a review of current capabilities and resources, including Federal and State assets. The discussions included summaries of activities of the National Disaster Medical System, the State Trauma System, the Metropolitan Medical Response System, the Federal Emergency Management Agency, the Strategic National Stockpile, the Department of Emergency Homeland Security, and the UDOH Emergency Coordination Center.

The group was then provided with an overview of disaster response planning and the importance of the "4 C's" of command and control, communication, and coordination in planning to respond to MCIs.[5-6] A handout provided more detailed listings of areas and items to be considered in planning. A summary of a threat analysis was provided that included chemical, biologic, radiologic, nuclear, and explosive terrorism, as well as natural disasters and accidents. Later sessions during the day reviewed the capabilities of volunteer organizations and of Utah hospitals.

Subsequent to these sessions, the group turned to identification of planning and resource gaps and delineation of additional resources and capabilities. The initial Task Force meeting closed with an overview of draft treatment guidelines for patients produced by burns, trauma, and weapons of mass destruction. One member of the coordinating group facilitated the discussions at this and the subsequent meetings.

Second Meeting

Prior to the second meeting, the coordinating group reviewed the results (ie, input, recommendations, and comments) obtained and transcribed during the initial meeting and input received subsequent to the meeting. This information, along with the literature review and other sources, was incorporated into a draft version of the medical surge plan. This draft was distributed to all Task Force members prior to the second meeting.

The second meeting began with introductions, review of confidentiality requirements, and an overview of the purpose of the Task Force. The Task Force then concentrated on a review and discussion of the draft plan, beginning with the direction and control

Table 2. Types of information added as appendices to the state medical surge plan

1. Medical and legal liability concerns during a mass casualty incident
2. Transportation needs and planning
3. Credentialing of volunteers and providers working away from their usual medical facilities
4. Use of standardized triaging using the Standardized Triage and Rapid Treatment (START) system
5. Treatment guidelines
6. Frequently asked questions
7. Regional contact information
8. Equipment and supply transfer forms
9. Hospital status reports

section and followed by the other sections: activation and system response, regional hospital overview, communications, and critical issues.

The group next worked to identify needs and also agreed on the use of appendices for more detailed information on various portions of the plan. By using appendices, the larger group could concentrate on major operational aspects. (See Table 2 for a list of topics that were discussed with the use of appendices.)

Discussion during the day was wide ranging, although all comments focused on the need to respond effectively to an MCI. Interchanges were particularly helpful in defining additional resources as well as potential conflicts and other problems. All participants were actively involved in the discussions, and it was apparent that the members had expended significant time preparing for the meeting.

Third Meeting

In preparing for the third meeting, members of the coordinating group again met to incorporate the input from earlier meetings and those received subsequent to the meetings. An "initial 'final' draft" version of the plan was prepared and distributed in advance of the third meeting. The third session focused on transportation and coordination, patient tracking systems, regional emergency medical services coordinators, 20% bed surge capacity, trauma guidelines, and plan review. Relatively few revisions of the plan were required as a result of the third meeting. However, as only one example of the benefit of having the series of meetings, the category of "emerging infections" was added to the threat analysis during this meeting. It was noted that many aspects of planning for bioterrorism response would be directly applicable to responding to an MCI due to other infectious agents. As previously noted, a fourth meeting for a review of the "final, final draft" version of the plan had been scheduled. A draft plan with input was sent to Task Force members before the September "Last Look and Comments" session.

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Fourth Meeting

The fourth meeting concentrated on the trauma treatment guidelines, biologic agent triage guidelines, other biologic concerns, and a final discussion of the plan. At the end of the meeting, all participants agreed that they had developed an appropriate and practical plan. After minor final revisions, the plan was submitted to UDOH on September 28, 2004. The plan content is provided in Part II.[7]

Lessons Learned or Confirmed

The process of developing a statewide medical surge plan demonstrated a number of factors that proved essential in preparing a practical, effective plan that would meet the intent of the granting agency. These factors included the following:

- **Begin with a small group.** A small group that consists of subject matter experts is required for preliminary activities and for ongoing monitoring of the process as the plan evolves.
- **Identify key personnel early.** It is essential to identify as many major stakeholders as possible prior to the first planning meeting. This approach does not exclude the possibility of inviting others to subsequent meetings, because inclusion of a diverse group of interested parties will facilitate "buy in" of the plan and also help avoid significant omissions.
- **Utilize prominent players to ensure success.** The active involvement of the executive director of the Department of Health played a major role in having so many stakeholders attend the meetings and participate actively in the process. His personal efforts and attention to detail, such as personally inviting Task Force members with special invitations, helped to make the group successful from the start.
- **Create a central office.** One central office should be responsible for obtaining input from the Task Force and coordinating group members. This office can be responsible for incorporating all input into plan revisions that might otherwise be omitted if different versions of the plan were prepared by multiple agencies. The central office could also date each revision so all will know which version of the plan was being used.
- **Use a small group to develop an initial draft plan.** A draft plan should be prepared by the coordinating or similar small group and distributed

to the Task Force members before a planning meeting. Attempting to develop a plan *de novo* by involving more than 40 participants could have resulted in minimal results in spite of expenditure of major amounts of time. It was never the intent of the coordinating group to provide a definitive version of the plan to the Task Force prior to the second meeting but, rather, to furnish a "straw man" (initial draft that was expected to undergo major modifications in *content*) with the format and major aspects depicted. This approach permitted Task Force members to concentrate on enhancing the plan instead of having detailed discussions on plan format, sequencing of sections, and similar concerns.

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- **Identify one group facilitator.** It is advantageous to have the same person facilitate all the meetings. This person should have sufficient expertise in writing disaster response plans to recognize that a wide scope of actions will be required and multiple agencies will be involved. The facilitator should be able to encourage participation of the more reticent members of the task force so that there is a sense of contribution on the part of everyone. During the sessions, it also proved beneficial for the facilitator to have a sense of humor, particularly as discussions between two or more agencies became somewhat strained.
- **Characterize the plan as "ongoing."** The coordinating group recognized, and stressed to the Task Force participants, that the plan would still be a work "in progress" when the "final" version was submitted to UDOH. Although specific responsibilities and actions could be defined for many aspects of the plan, other portions required activities, such as legislative actions, that were beyond the scope of the Task Force. The group could highlight required activities and recommend responsibilities, but it was important to recognize that UDOH or other state agencies would be responsible for determining how the concerns were to be resolved.
- **Do not underestimate the time required to create a plan.** Preparing an effective medical surge plan takes time. Although granting agencies may wish to expedite the process, it is essential to provide adequate time for preliminary planning activities. Task Force members will need to review the effort before and after each session and provide input. Additionally, developing a medical surge plan will involve senior members of medical facilities, health departments, and other organizations. These members have ongoing responsibilities that are separate from the planning effort, and these needs cannot be neglected to devote time exclusively to the project.
- **Identify support services for creating a large document.** The final version of the plan, including appendices, was more than 130 pages. A copy editor would have been of significant value to help assure consistency throughout the document and to provide other appropriate editorial input. Future planning should include funding this type of service.
- **Select appropriate meeting sites.** Off-site locations that were some distance from participants' offices were selected for all Task Force meetings. The expense was justified by the fact that members did not attempt to leave for their offices "for a few minutes" during breaks with the typical result of extensive delays in returning to the session.
- **Test the plan.** Regardless of the planners' attempts to consider the numerous factors involved in responding to an MCI, it must be expected that omissions and other errors will be present. The only way to resolve these concerns is through appropriate exercises of the plan. Although table-top exercises can be of value in overall evaluation of the plan, realistic field exercises, with appropriate "After Action" reviews, are essential in refining the plan so that it will assist all concerned in making coordinated, effective responses to an MCI.[6]

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Summary

Members of the UDOH and UHSC developed a planning process to prepare a useful medical surge plan for the state. A coordinating group of subject matter experts worked with a diverse group of stakeholders through an iterative process to develop a plan that should serve as the framework for response by public health, medical facilities, and

other organizations during an MCI. A subsequent document will discuss the content of the plan.[7]

Acknowledgements: We thank Mr Alex Kosyak, HRSA, for his continuous support throughout this effort. We also wish to recognize Linda K. Amos, EdD, RN, Associate Vice President for Health Sciences, for her support and encouragement, and Scott Williams, MD, MPH, Executive Director of the UDOH, for his support and efforts in personally inviting Task Force members to participate in the process.

References

1. Centers for Disease Control and Prevention. Mass trauma preparedness and response [online, retrieved 20 Dec 2004]. Available from: URL: *www.bt.cdc.gov/masstrauma/*
2. Centers for Disease Control and Prevention. Natural disasters [online, retrieved 20 Dec 2004]. Available from: URL: *www.bt.cdc.gov/disasters/index.asp*
3. Centers for Disease Control and Prevention. Radiation emergencies [online, retrieved 20 Dec 2004]. Available from: URL: *www.bt.cdc.gov/radiation*
4. Gebbie KM. Bioterrorism and emergency readiness: competencies for ALL public health workers (Columbia University School of Nursing Center for Health Policy) [online, retrieved 5 Apr 2005]. Available from: URL: *www.nursing.hs.columbia.edu/institutes-centers/chphsr/btcomps.html*
5. Moser R Jr, White GL, Lewis-Younger C, Garrett LC. Preparing for expected bioterrorism attacks. Mil Med 2001 166-369-74.
6. Moser R Jr, White GL, Connelly C, Amos LK. Planning for health care responses to natural disasters, terrorism, and other mass casualty situations. Utah's Health 2003;IX:20-3.
7. Moser R Jr, Connelly C, Baker L, et al. Development of a state medical surge plan—II, plan content. *Disaster Manag Response* (in press).