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Critical Resource Shortages: A Planning Guide

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INTRODUCTION

Most experts, scholars and healthcare providers agree that during a pandemic the healthcare system's ability to continue to provide care will be compromised. The challenge for providers, especially hospitals, is to plan to continue providing care in the face of severe resource shortages combined with an influx of large numbers of very sick patients. To do this, hospitals must create both internal plans that dictate how the hospital will surge and allocate scarce resources, and external plans that build collaborative relationships with other healthcare providers and key community resources which complement and support the hospital's internal plans.

Healthcare providers are not accustomed to having to allocate inadequate personnel, equipment and supplies on the scale they will confront in a pandemic. The prospects of allocation on this scale, understandably, cause profound concern within the healthcare community because such decisions are inextricably tied to liability. These providers understand that they have a duty to render care in accordance with the applicable standard of care or face liability for malpractice. "Altered" standards of care, which by definition do not meet the traditional standard of care, implicate and exacerbate these concerns.

Providers in Virginia, both hospitals and physicians, expressed concerns about this very issue to VHHA. These concerns were so strong that, at the extreme, some providers were contemplating closing their doors during a pandemic instead of providing care under "altered" standards unless they had some degree of liability protection. VHHA recognized the gravity of the situation and, in coordination with VDH, engaged Troutman Sanders LLP to help it address this issue.

VDH, VHHA and Troutman Sanders (the "Core Team") recognized that there were substantial misconceptions and confusion among healthcare providers about their realistic liability exposure in relation to "altered" standards. The first step in developing a comprehensive strategy for addressing providers' concerns was for Troutman Sanders to evaluate the current law to determine if any of the liability concerns were legitimate. This evaluation consisted of: (i) an inventory of relevant Virginia laws including the Virginia Emergency Services and Disaster Law, the Virginia Good Samaritan Law, the Virginia State Government Volunteers Act, the statutory "standard of care" in Virginia, and Virginia's Model Jury Instructions for medical malpractice; and (ii) an analysis of applicable laws in relation to a potential "altered" standard of care case, licensure and scope of practice restrictions. Troutman developed a White Paper summarizing its legal analysis that is available as a resource for all Virginia healthcare providers. This legal analysis confirmed that there was indeed a gap in liability protection that left healthcare providers vulnerable to potential claims of malpractice for care provided pursuant to "altered" standards during a disaster.

Beginning in 2006, the Core Team convened a multi-disciplinary, state-wide work group to evaluate options to address the liability associated with "altered" standards of care (the "Altered Standards Work Group"). The Core Team selected members for the Altered Standards Work Group to assure that diverse perspectives were present without creating a group that was too large to be effective. The Altered Standards Work Group was composed of individuals from across the state who represent various healthcare institutions, clinician groups, public health,

emergency planning bodies and a state legislator. The Altered Standards Work Group sessions were facilitated by Troutman because of their extensive experience in representing both health providers and public health interests, which enabled them to understand the perspective of each stake holder.

The Troutman Sanders White Paper helped dispel common misconceptions about liability during disasters and assured that all members of the Altered Standards Work Group had the same basic background information. This helped the Altered Standards Work Group to realize that liability in an “altered” standard of care sense was a function of two separate but related components: the existing “black letter” law and how that law is likely to be applied to a disaster situation involving the actual delivery of care. The Altered Standards Work Group decided to pursue a two-tiered approach to addressing the issue: suggesting legislative solutions and drafting practical guidance for hospitals to help them determine how to actually deliver care in the face of scarce resources.

When the Altered Standards Work Group first convened, legislative solutions were neither immediate nor guaranteed. As a result, the Altered Standards Work Group pursued a strategy which would allow them to create a tool to help hospitals think and plan for providing care with limited resources. While a few others across the country had devised specific “altered” standard of care algorithms for the allocation of specific resources, like ventilators, the Altered Standards Work Group could find no comprehensive planning guide on which to base its work. In the absence if any definitive tools, the Altered Standards Work Group undertook an ambitious project of creating such a guide from whole cloth (the “Critical Resource Shortage Planning Guide” or “Planning Guide”).

The Altered Standards Work Group had to come to a consensus on key assumptions regarding the provision of healthcare with scarce resources which will lead to an “altered” standard of care. The three most basic assumptions are as follows:

1. When talking about “altered” standards of care, we are really talking about allocation of critical resources in times of shortage. Critical resources are those that are required to sustain human life, prevent permanent disability, or stabilize a person experiencing a medical emergency. These resources will include staff, space and “stuff” such as equipment, medications and supplies.
2. While it is commonly recognized within the healthcare industry that “altered” standards of care will have to be employed during a disaster, there is no consistency about the exact nature of those standards. Each disaster situation is unique, as is each healthcare community. This makes it difficult to formulate universal, rigid “altered” standards of care in advance. Instead, it will be most beneficial to offer a *process* that providers can use to identify the content of such standards. That process can then be utilized to develop “altered” standards algorithms as the need arises. This is especially true with a pandemic in which high absenteeism rates will make health care staff in very short supply. In addition, the process can be used to create mechanisms at a healthcare facility to implement an “altered” standard of care if one is promulgated by the state or federal government (e.g. ventilator algorithms).
3. Hospitals will allocate scarce resources in a way that does the greatest good for the greatest number, as determined by the provider.

Recognizing the enormously complex ramifications of these assumptions, the Altered Standards Work Group focused its efforts on creating a tool that provides a systematic approach to addressing the complex issues surrounding the allocation and deployment of scarce resources during large scale events, like a pandemic. The result of the effort is the Planning Guide which provides a specific, detailed decision matrix that healthcare providers across the nation can use to anticipate and respond to shortages of critical resources during an event. The Planning Guide walks a provider step-by-step through the key stakeholders that should be involved in “altered” standards planning, the questions that need to be asked, the decisions that need to be made and the interdependencies that must be taken into account. Even with all of this specificity, the Guide is flexible enough to be used by a 900 bed academic medical center and a 15 bed critical access hospital.

The Core Team and the Work Group hope that this Planning Guide will be a useful tool for hospitals to use in their pandemic preparedness efforts. Any questions about the Guide can be directed to Steve Gravely at (804) 697-1308 or steve.gravely@troutmansanders.com or Erin Whaley at (804) 697-1389 or erin.whaley@troutmansanders.com.

DEFINITIONS

Critical Resource: A resource that is necessary to provide care to sustain human life, prevent permanent injury/disability or stabilize a patient experiencing a medical emergency. Critical Resources can include people, places and things.

Critical Resource Shortage: A circumstance in which a Critical Resource is depleted, and all alternate methods of obtaining the Critical Resource have been exhausted, such that remaining resources will not allow a hospital to treat patients in accordance with the traditional standard of care.

Critical Resource Shortage Response Plan: That treatment protocol created in response to a Critical Resource Shortage caused by an Emergency or Disaster, as defined in Title 44 of the Code of Virginia (see Appendix 1), pursuant to which scarce Critical Resources are allocated to do the most good for the greatest number of patients.

Emergency or Disaster: Those community and statewide Emergencies and Disasters that are encompassed in the definitions in Title 44 of the Code of Virginia.¹ See Appendix 1 for a list of current definitions.

¹ This limitation is necessary as the legislative initiatives are tied to Title 44 definitions. Note: this does not mean that the Disaster needs to be a declared emergency. It only means that it must fall within the definitions of Emergencies and Disasters in Title 44.

PLANNING GUIDANCE

Pre-Event/Preparedness Phase: There are certain resources for which it is foreseeable that during an Emergency or Disaster there will be a Critical Resource Shortage. For these items, a facility should determine how it will respond to the Critical Resource Shortage before the event occurs.

Planning Committee:

1. Identify an existing committee(s) or establish a new committee that will be responsible for conducting a Critical Resource Vulnerability Analysis and establishing baseline principles that will be used when determining how to respond to a Critical Resource Shortage.
 - 1.1. Obtain representation from appropriate nursing specialties (e.g. critical care, emergency department, floor and operating room), medical staff leadership, physicians from appropriate specialties (e.g. intensivists, surgeons, internal medicine, pediatrics, emergency medicine, trauma, hospitalists, primary care, palliative care), and representatives from therapy services, administration, laboratory, pharmacy, information systems (whoever is involved in results reporting, e.g. lab, x-ray), ethics, legal, and Incident Command (logistics, planning and operations – clinical).
 - 1.2. If hospital chooses to use multiple committees to perform these functions, ensure that there is one person who is responsible for management and oversight of the various committee responsibilities and the process in general.

Critical Resource Vulnerability Analysis:

2. Conduct a Critical Resource Vulnerability Analysis to determine which Critical Resources may become limited in the event of an Emergency or Disaster.
 - 2.1.1. The group tasked with conducting this analysis should brainstorm and create a list of all those resources necessary to sustain human life, prevent permanent injury/disability or stabilize a patient experiencing a medical emergency.
 - 2.1.2. Resources should be categorized as equipment/supplies, physical space or personnel.
 - 2.1.3. With respect to personnel, the group should identify those skill sets that will be needed to respond to the Emergencies and Disasters identified in the facility's most recent hazard vulnerability analysis. Once skill sets are identified, they should be classified as a "Critical Resource" if they are necessary to sustain human life, prevent permanent injury/disability or stabilize a patient experiencing a medical emergency, or if few people within the facility have this skill set and cross training or just-in-time training is not practical or realistic because of the specialization of the skill.
 - 2.1.4. See Appendix 2 for a sample list of Critical Resources.

- 2.1.5. The Critical Resource Vulnerability Analysis could be facility specific or system specific based upon the resources of the facility/system and the most likely threats.
- 2.2. Prioritize those resources identified in the Critical Resource Vulnerability Analysis by determining which of the resources are most likely to be depleted causing a Critical Resource Shortage.
 - 2.2.1. When making this determination consider which resources, when depleted, will have the greatest impact on sustaining patient's lives and which resources are most likely to be critically important and/or depleted in light of the hospital's most current hazard vulnerability analysis.
 - 2.2.2. Example: A hospital's top Disaster may be a chemical explosion at a nearby plant. This will cause a large influx of burn patients. Burn care kits will be in high demand and likely depleted. Burn care kits are, therefore, on the top of the hospital's Critical Resource list.
- 2.3. Identify mechanisms for mitigating depletion of the Critical Resource for the resources as identified in and prioritized by the Critical Resource Vulnerability Analysis. Examples of mitigation mechanisms include:
 - 2.3.1. Stockpiling;
 - 2.3.2. MOAs/MOUs for resource sharing; and,
 - 2.3.3. Modification and/or substitution with other resources (e.g. substituting ambu-bags for ventilators).
- 2.4. Revisit the Critical Resource Vulnerability Analysis at least once every two years or after an Emergency or Disaster.

Baseline Ethical Principles:

3. Establish baseline ethical principles to guide the response to Critical Resource Shortages and the development of specific Critical Resource Shortage Response Plans.
 - 3.1. Consider the following general principles when answering the questions in this Section 3:
 - 3.1.1. Respect for patient and health care provider autonomy;
 - 3.1.2. Beneficence (who will benefit from the decision?);
 - 3.1.3. Non-maleficence (minimize the risk of harm);
 - 3.1.4. Distributive justice (fundamental fairness);
 - 3.1.5. Transparency of process;
 - 3.1.6. Stewardship of resources; and,
 - 3.1.7. Accountability.
 - 3.2. What does it mean to provide the greatest good for the greatest number?

- 3.3. During a Critical Resource Shortage, will providers be allowed to withdraw or stop providing the Critical Resource to one patient to give to another patient for whom the Critical Resource is more appropriate or beneficial or will providers have to adhere to a “first come, first served” policy?
- 3.4. What resources should be given to those patients who are not given the Critical Resource?
 - 3.4.1. Should these patients be given alternative resources, if available?
 - 3.4.2. Should these patients and their families be given palliative care? If so, refer to Section 3.5.
 - 3.4.3. Should these patients remain in the facility, be discharged or transferred to another facility (e.g. alternative care center)?
 - 3.4.4. Who will make these decisions?
- 3.5. Palliative Care
 - 3.5.1. What is the goal of palliative care during a Critical Resource Shortage?
 - 3.5.1.1. To relieve pain?
 - 3.5.1.2. To manage symptoms without use of the Critical Resource in question?
 - 3.5.1.3. To ensure that patients are not abandoned even though they are not receiving the Critical Resource?
 - 3.5.1.4. Other goals?
 - 3.5.1.5. Remember that there will likely be individuals receiving palliative care during a Critical Resource Shortage who would not have received palliative care during normal times when the Critical Resource was readily available.
 - 3.5.2. How will your facility define palliative care during a Critical Resource Shortage? Consider the following definitions:
 - 3.5.2.1. World Health Organization: “An approach which improves the quality of life of patients and their families facing life-threatening illness, through the prevention, assessment, and treatment of pain and other physical, psychosocial, and spiritual problems.”
 - 3.5.2.2. Joint Commission: “Palliative care is an approach designed to improve the quality of life of patients and their families by relieving the pain, symptoms and stress of serious illnesses such as cancer or AIDS.”
 - 3.5.2.3. National Consensus Project for Quality Palliative Care: “Palliative care focuses on the relief of suffering and distress for people facing serious, life-threatening illness to help them and their families to have the best possible quality of life, regardless of the stage of the disease or the need for other therapies. Palliative care is both a philosophy of care and an organized, highly structured system for delivering care. Palliative care expands traditional disease-model medical treatments to include the goals of enhancing quality of life for patient and family, optimizing function, helping with decision making, and providing opportunities for personal growth. As

such, it can be delivered concurrently with life-prolonging care or as the main focus of care.”

3.5.3. Review your facility’s existing protocols, policies and procedures for palliative care during normal times.

3.5.3.1. How should these be modified for use during a Critical Resource Shortage? Refer to Sections 3.5.1 and 3.5.2 when modifying these policies.

3.5.4. Who will provide palliative care?

3.5.4.1. What training is needed to prepare these individuals?

3.5.4.2. What emotional and psychological support will be provided for these individuals?

3.5.5. Are there palliative care support organizations in your area that can provide assistance?

3.6. Are there any factors or patient characteristics that should not be factored into allocation decisions and specific Critical Resource Shortage Response Plans? Consider the following as inappropriate characteristics on which to base allocation decisions: ability to pay; social worth; patient contribution to the disease; past use of resources; race or ethnicity; religion; and gender. (See California Department of Health Services for examples of inappropriate exclusion criteria <http://bepreparedcalifornia.ca.gov/EPO/CDPHPrograms/PublicHealthPrograms/EmergencyPreparednessOffice/EPOProgramsServices/Surge/SurgeStandardsGuidelines/>).

3.7. Decisions about issues presented in Section 3 should be recorded and communicated to each group charged with developing Critical Resource Shortage Response Plans for specific Critical Resources identified in the Critical Resource Vulnerability Analysis.

Operational Issues:

4. Address the following operational issues to guide the development of specific Critical Resource Shortage Response Plans.

4.1. Consider the following general operational issues.

4.1.1. Who is the most appropriate person within the organization to identify a Critical Resource Shortage? Is this a CEO level decision or a clinical operations decision?

4.1.2. To whom within your incident command structure should this finding be reported?

4.1.3. Who within your incident command structure will declare that a Critical Resource Shortage exists?

4.1.4. Who within your incident command structure will authorize the implementation of Critical Resource Shortage Response Plans?

4.1.5. Who within your incident command structure is responsible for obtaining and reviewing the state or local emergency declaration, if one is made?

- 4.1.6. Once implementation of a Critical Resource Shortage Response Plan is authorized, who within your organization will be designated to make the allocation decisions based on the Critical Resource Shortage Response Plan? Will this be one person, a committee, or will individual treating physicians be charged with this duty?
 - 4.1.6.1. If your facility chooses to designate a person(s), how will they be selected? Will the selection be dependent upon the resource that is scarce or will the selection remain consistent for all resources? Will the committee be the same as the one created in Section 1? Will it be a subset of the committee in Section 1, or will it be composed of different individuals?
 - 4.1.6.2. What powers will the designated person(s) have?
 - 4.1.6.3. How will the designated person(s) interact with Incident Command, specifically Medical Control and Resource Management?
 - 4.1.6.4. How will the designated person(s) interact and coordinate with Medical Control regarding non-compliant physicians? (See Section 4.1.12)
 - 4.1.6.5. Can the facility offer additional liability protection for these individuals in recognition of the difficult decisions they will have to make?
 - 4.1.6.6. Is the designated person(s) covered for decisions made in this role by the facility's insurance policy? If not, should the person(s) be added to the facility's insurance policy for this purpose?
- 4.1.7. Once a Critical Resource Shortage Response Plan is activated, how often will the Critical Resource Shortage situation be re-assessed during the event to determine if changes should be made to the response plan?
 - 4.1.7.1. Who within incident command will be responsible for monitoring the situation?
 - 4.1.7.2. To whom will they report significant changes in the situation?
 - 4.1.7.3. Who is responsible for altering the Critical Resource Shortage Response Plan to accommodate the new situation? Will the person(s) be dependent upon the resource that is scarce or will the person(s) remain consistent for all resources?
 - 4.1.7.4. How will these intra-event changes be communicated to staff for implementation?
 - 4.1.7.5. How will these intra-event changes be documented?
- 4.1.8. When should Critical Resource Shortage Response Plans be terminated?
- 4.1.9. Who within your incident command structure will authorize termination of Critical Resource Shortage Response Plans?
- 4.1.10. During Emergencies and Disasters, what type of documentation will practitioners be required to complete? This documentation can be referred to as "essential documentation."

- 4.1.11. What mechanisms will be used to keep facility personnel updated and informed about the implementation of, content of, modifications to, and termination of Critical Resources Shortages Response Plans? See Section 8.4 for information on inclusion of these mechanisms in your EOP.
- 4.1.12. What should happen when a physician chooses not to comply with a Critical Resource Shortage Response Plan?
 - 4.1.12.1. Review Medical Staff bylaws to determine current enforcement powers during an Emergency or Disaster.
 - 4.1.12.2. Identify Medical Control for the facility.
 - 4.1.12.3. Should Medical Control have the authority to take over patient care from individual physicians? If so, is this reflected in the Medical Staff bylaws and in the facility's EOP?
 - 4.1.12.4. How will the hospital address clinicians who refuse to operate outside their scope of practice when such is required by the Critical Resource Shortage Response Plan?
 - 4.1.12.5. Modify the hospital's EOP and Medical Staff Bylaws accordingly.
- 4.1.13. What mechanisms will be used to provide support and recovery services to employees, patients, and families during the intra-event/response and post-event/recovery phases?
 - 4.1.13.1. What services will be provided?
 - 4.1.13.2. Will the facility provide these services or will they contract with an outside organization (e.g. EAP) to provide them?
 - 4.1.13.3. Facility Human Resources professionals should be involved with developing these mechanisms.
- 4.2. Decisions about issues presented in Section 4 should be recorded and communicated to each group charged with developing Critical Resource Shortage Response Plans for specific Critical Resources identified in the Critical Resource Vulnerability Analysis.

Critical Resource Shortage Response Plan Development:

- 5. Develop Critical Resource Shortage Response Plans to address the resources identified in the Critical Resource Vulnerability Analysis according to the prioritization. For critical shortages of material resources, refer to Section 5.2. For a critical shortage of physical space, refer to Section 5.3. For a critical personnel shortage, refer to Section 5.4.
 - 5.1. For each Critical Resource identified in the Vulnerability Analysis, assemble a small group tasked with developing a Critical Resource Shortage Response Plan to address the shortage of the specific Critical Resource in question.
 - 5.1.1. Groups should be composed of at least one facilitator, IC (logistics, planning and/or operations – clinical), at least two physicians representing the relevant field/specialty, a nurse representing the relevant field/specialty, a palliative care

specialist (if available), any other type of clinician representing those whose practice will be impacted by the Critical Resource Shortage, an administrative representative, and a representative of the ethics committee.

- 5.1.2. Groups should be subcommittees of the committee(s) that conducted the Critical Resource Vulnerability Analysis.

Critical Shortage of Material Resources:

5.2. Using the ethical and operational principles developed in Sections 3 and 4 of this Planning Guide, respectively, each small group should address the following issues with respect to the specific critical *material resource* (e.g. equipment, medications) in question to create a Critical Resource Shortage Response Plan.

- 5.2.1. Does the hospital already have a plan in place to mitigate a shortage? If not, such a plan should be created. If so, the remainder of this planning process assumes that mitigation is no longer a feasible option.

- 5.2.1.1. This will require an evaluation of the facility's "surge" plan and its plans to share resources with other facilities in its region.

- 5.2.2. At what point will a Critical Resource Shortage exist? At what point will clinicians have to change their practice based on the shortage? Are there varying levels of shortage that will impact practice in different ways?

- 5.2.3. What type of services will be impacted by the Critical Resource Shortage?

- 5.2.4. How will these services change during the Critical Resource Shortage?

- 5.2.5. Will the change in service depend on the severity of the Critical Resource Shortage? In other words, will there be different plans or protocols that apply to different severities of Critical Resource Shortages?

- 5.2.6. How will patients be triaged for the Critical Resource in question? What patients will receive the Critical Resource first, second, third, etc.? Refer to the ethical principles established in Section 3.

- 5.2.7. When there is a Critical Resource Shortage, what criteria will determine whether the patient is given the resource? Is there any literature to guide the development of these criteria? See Appendix 3.

- 5.2.8. What criteria will dictate that a patient should not receive the resource as a result of the Critical Resource Shortage? Is there any literature to guide this decision? See Appendix 3.

- 5.2.8.1. Refer to decisions made in Section 3.6 regarding those criteria that should not be used to justify withholding a Critical Resource from a patient.

- 5.2.9. If applicable pursuant to your facility's established ethical principles as defined in Section 3.3 and to the Critical Resource in question, under what clinical circumstances will the hospital/provider withdraw the Critical Resource from one

patient to give to another patient for whom use of the Critical Resource is more appropriate?

- 5.2.10. Based on decisions made in Sections 3.4 and 3.5, what specific resources will be provided to those patients who will not receive the Critical Resource?
- 5.2.11. If in Section 4.1.6.1 the facility decided to use a designated person(s) to make allocation decisions who is chosen based on the Critical Resource being allocated, who is the appropriate person(s) for this resource?
- 5.2.12. Which types of providers (MDs, RNs, LPNs) will use the Critical Resource in question to provide care?
- 5.2.13. What type of training is needed pre-event to aid implementation of the specific Critical Resource Shortage Response Plan? What training will be conducted at the time of the event to aid implementation or allow for those not typically involved in using this Critical Resource to become involved (“just-in-time” training)?
- 5.2.14. What specific documentation is required to document services rendered pursuant to the Critical Resource Shortage Response Plan based on the definition of “essential documentation” determined in Section 4.1.10? How will this documentation be captured during the Emergency?

Critical Shortage of Physical Space:

- 5.3. Using the ethical and operational principles developed in Sections 3 and 4 of this Planning Guide, respectively, each small group should address the following issues with respect to a critical shortage of *physical space* in the facility to create a Critical Resource Shortage Response Plan.
 - 5.3.1. At what point will a critical shortage of physical space exist? At what point will clinicians have to change their practice based on the shortage?
 - 5.3.2. What type of services will be impacted by the critical shortage of physical space?
 - 5.3.3. How will these services change during the critical shortage of physical space?
 - 5.3.4. What alternative locations can be used to provide services to patients during the critical shortage?
 - 5.3.4.1. When choosing alternative locations, the following should be taken into consideration.
 - 5.3.4.1.1. What utilities (e.g. medical gases, electricity, water, communication capabilities) are needed? Are these already available in the alternative location? If not, can they quickly be made available in the alternative location?
 - 5.3.4.1.2. Are there any support services (e.g. OR recovery space) that need to be in close proximity to the service that is being displaced?

- 5.3.4.1.3. For what is the alternative location currently being used? Is there equipment, furniture, or people that will need to be moved from that space in order to use it?
- 5.3.4.1.4. Will existing patients be transferred to the alternative location, or will only new patients be treated in the alternative location? If existing patients will be transferred, how will this be accomplished?
- 5.3.4.2. Potential locations for alternative space may include administrative space, conference rooms, medical office buildings, or space where non-essential services have been discontinued for the duration of the Emergency or Disaster.

Critical Personnel Shortage:

- 5.4. Using the ethical and operational principles developed in Sections 3 and 4 of this Planning Guide, respectively, each small group should address the following issues with respect to a *critical personnel shortage* to create a Critical Resource Shortage Response Plan.
 - 5.4.1. Does the hospital already have a plan in place to mitigate the critical personnel shortage? If not, such a plan should be created. If so, the remainder of this planning process assumes that mitigation is no longer a feasible option.
 - 5.4.1.1. This will require an evaluation of the facility's "surge" plan and its plans to share human resources with other facilities and to obtain additional human resources through volunteers and medical reserve corps in its region.
 - 5.4.2. At what point will a critical personnel shortage exist? At what point will clinicians have to change their practice based on the shortage? Are there varying levels of shortage that will impact practice in different ways?
 - 5.4.3. What services will be impacted by the critical personnel shortage?
 - 5.4.4. How will these services change during the critical personnel shortage? Will certain services cease, while others expand or are reduced?
 - 5.4.5. Will the change in services depend on the severity of the critical personnel shortage? In other words, will there be different plans or protocols that apply to different severities of critical personnel shortages?
 - 5.4.6. How will patients be triaged for services provided by the critical personnel in question? What patients will receive the services first, second, third, etc.? Refer to the ethical principles established in Section 3.
 - 5.4.7. When there is a critical personnel shortage, what criteria will be used to determine whether the patient is treated by the critical personnel? Is there any literature to guide the development of these criteria? See Appendix 3.

- 5.4.8. What criteria will be used to determine that a patient should not be treated by the critical personnel as a result of the critical personnel shortage? Is there any literature to guide this decision? See Appendix 3.
- 5.4.8.1. Refer to decisions made in Section 3.6 regarding those criteria that should not be used to justify withholding a Critical Resource from a patient.
- 5.4.9. For those patients who will not be treated by the critical personnel, will they be treated by another category of staff member in the facility? By a family member? By volunteers? By nonclinical personnel?
- 5.4.10. Can the number and type of delegable duties be expanded to help address the critical personnel shortage?
- 5.4.10.1. Do your facility's policies limit licensed personnel's scope of practice more than that required by statute? If so, can the policies be amended during a critical personnel shortage to allow licensed personnel to do more? How, if at all, can licensed providers obtain expanded privileges during a critical personnel shortage to address the problem?
- 5.4.11. What type of training is needed pre-event to aid implementation of the specific Critical Resource Shortage Response Plan? What training will you conduct at the time of the event to aid implementation or allow for those not typically involved in providing these services to become involved ("just-in-time" training)?
- 5.4.12. Will a critical personnel shortage affect the ability to produce "essential documentation" as defined in Section 4.1.10? If so, what can be done to ensure that "essential documentation" is completed during the critical personnel shortage?
- 5.5. Once the group has answered all the questions in either Section 5.2, 5.3 or 5.4, depending on the resource in question, to their satisfaction, they will have created the content of a Critical Resource Shortage Response Plan. This content should be reduced to writing in the form of a policy.
- 5.6. Present the policy to the group(s) that conducted the Critical Resource Vulnerability Analysis for discussion, revision and approval.
- 5.7. Present the policy to the Medical Staff for approval.
- 5.8. Present the policy to the appropriate governing body(ies) for approval.
- 5.9. Add the policy to the appropriate Hospital policy manual(s) and incorporate into the facility's EOP.
- 5.10. Educate and train physicians and staff on the use of the Critical Resource Shortage response policy and documentation required.

Triage Protocols:

6. Develop triage protocols that will be used in Emergency and Disaster situations.
 - 6.1. Convene a group or use an existing group composed of at least a facilitator, at least two emergency room physicians, an emergency room nurse, IC Medical Control (e.g. operations-clinical and mass care), a palliative care specialist (if available), EMS representatives, an administrative representative, and a representative from the ethics committee.
 - 6.2. Group will:
 - 6.2.1. Determine at what capacity levels current triage mechanisms will not be appropriate or practical. The group may choose to take a tiered approach to answering this question by designating several “breaking point” capacities. When determining “breaking points,” the group should take into account at least the following:
 - 6.2.1.1. Number of patients presenting;
 - 6.2.1.2. Time frame of the influx of patients (e.g. hours v. days v. weeks);
 - 6.2.1.3. Method of presentation (e.g. EMS v. self-refer);
 - 6.2.1.4. Severity of expected injury/illness;
 - 6.2.1.5. Number of staff available;
 - 6.2.1.6. Number of beds available;
 - 6.2.1.7. Amount of space for waiting patients; and,
 - 6.2.1.8. Location of triage.
 - 6.2.2. Review the several existing triage systems, including:
 - 6.2.2.1. Emergency Severity Index (ESI): Five-level emergency department triage algorithm that divides patients into five groups from 1 - most urgent to 5 - least urgent on the basis of acuity and resource needs. The handbook can be downloaded at <http://www.ahrq.gov/research/esi/#download>.
 - 6.2.2.2. START Triage: START stands for "Simple Triage and Rapid Treatment." Using the START program, patients can be triaged in 60 seconds or less. Information on this can be found on their website at <http://www.start-triage.com>.
 - 6.2.2.3. JumpSTART Pediatric Multiple Casualty Incident Triage: This is similar to the START triage program, but is specifically designed to triage children. More information can be found on the website at <http://www.jumpstarttriage.com/>.
 - 6.2.2.4. START, then SAVE: This takes the START system to a secondary triage level of SAVE ("Secondary Assessment of Victim Endpoint").
 - 6.2.2.5. MASS Triage: "Move, Assess, Sort, Send" This system utilizes US military triage categories with a proven means of handling large numbers of

casualties in a mass casualty incident. "Id-me!" (Immediate, Delayed, Minimal, Expectant) is used to sort patients while using the MASS triage model.

- 6.2.3. Determine which triage protocols (existing or new) should be implemented at each "breaking point" identified.
- 6.2.4. Based on decisions made in Sections 3.4 and 3.5, what specific resources will be provided to those patients triaged to a non-treatment category (e.g. expectant)?
- 6.3. Once the group reaches consensus on the above issues, Emergency and Disaster triage protocol policies should be drafted.
- 6.4. Present the policy to the group(s) that conducted the Critical Resource Vulnerability Analysis for discussion, revision and approval.
- 6.5. Present the policy to the Medical Staff for approval.
- 6.6. Present the policy to the appropriate governing body(ies) for approval.
- 6.7. Add the policy to the appropriate Hospital policy manual(s) and incorporate into the hospital's EOP, including the Mass Casualty Incident Annex, if applicable.
- 6.8. Create any forms that are needed to use the triage system effectively.
- 6.9. Educate and train physicians and staff on the use of the Emergency and Disaster triage policy.

Ad Hoc Critical Resource Shortage Response Plans:

In an Emergency/Disaster situation, unforeseen Critical Resources will become scarce leading to a need to implement Critical Resource Shortage Response Plans. Because by definition these shortages are unforeseen, the hospital cannot create specific Critical Resource Shortage Response Plans ahead of time. Hospitals can use the following process to determine Critical Resource Shortage Response Plans to respond to these unforeseen Critical Resource Shortages during an Emergency/Disaster.

NOTE: It is possible that hospitals will not have had the opportunity to develop plans for Critical Resources identified in the Critical Resource analysis. The process described below can be used for shortages of these Critical Resources as well.

7. Create mechanisms to operationalize the creation of Critical Resource Shortage Response Plans for resources for which no plan is pre-existing during an event.
 - 7.1. Identify individuals who will be called upon to develop Critical Resource Shortage Response Plans in the midst of an Emergency or Disaster.
 - 7.1.1. Identify and prioritize at least two representatives from the ethics committee.
 - 7.1.2. Identify and prioritize at least two administrators.
 - 7.1.3. Identify and prioritize physicians from each specialty represented on the Medical Staff.

- 7.1.4. Notify all identified individuals that they have been so identified, explain the scope of their responsibilities during an Emergency or Disaster, obtain signed agreement that the individuals will fulfill their duties during the Emergency or Disaster.
- 7.2. Create a contact list for all identified individuals that is to be kept with all other EOP materials.
- 7.3. Review the hospital's bylaws to ensure that in the event of an Emergency or Disaster, a few members of the governing body are vested with the authority to approve an ad hoc Critical Resource Shortage Response Plan. If this power does not exist, the bylaws should be amended to so provide.

Modify EOP and ICS:

8. Modify the EOP and ICS to reflect the incorporation of Critical Resource Shortage Response Plans (including operational considerations, ethical principles, pre-existing plans, and mechanisms for the creation of ad hoc plans) and triage protocols.
 - 8.1. Modify the EOP to reflect the command support function responsible for declaring a Critical Resource Shortage (See Section 4.1.3).
 - 8.2. Modify the EOP to reflect the command support function responsible for authorizing implementation of a pre-existing Critical Resource Shortage Response Plan.
 - 8.3. Modify the EOP to reflect the command support function responsible for convening the group that will create a Critical Resource Shortage Response Plan to address a Critical Resource Shortage for which no plan currently exists.
 - 8.4. Modify the EOP so that existing Emergency information distribution mechanisms can be used to distribute information about the implementation, content and eventual termination of Critical Resource Shortage Response Plans (See Section 4.1.11).
 - 8.5. If applicable, modify the EOP to recognize the role of designated person(s) who will be making triage decisions (See Section 4.1.6).
 - 8.6. Create a mechanism for reporting noncompliance with Critical Resource Shortage Response Plans within the ICS.

Educate Staff:

9. Educate medical staff and hospital staff on at least the following issues concerning Critical Resource Shortage Response Plans.
 - 9.1. The need for Critical Resource Shortage Response Plans during an Emergency or Disaster and the importance of complying with Critical Resource Shortage Response Plans when they are issued.
 - 9.2. Process for determining and implementing Critical Resource Shortage Response Plans prior to Emergency or Disaster.

- 9.3. Content of any existing or developed Critical Resource Shortage Response Plans policies.
- 9.4. Process for determining and implementing Critical Resource Shortage Response Plans during an Emergency or Disaster.
- 9.5. Medical Staff should be told about the list of physicians who will be called upon to develop Critical Resource Shortage Response Plans in the midst of an Emergency or Disaster.
- 9.6. All clinicians should be educated on the mechanism for reporting noncompliant behavior with Critical Resource Shortage Response Plans and the ramifications of noncompliance.
- 9.7. All providers should be educated on the role and responsibilities of the designated person(s) who will be making triage decisions (See Section 4.1.6), if applicable.
- 9.8. Liability protections available to those who render care during Emergency or Disaster circumstances (both in terms of civil liability and loss of licensure).

Exercise/Drill:

10. Exercise/drill

- 10.1. Conduct an initial exercise/drill to test the following:
 - 10.1.1. Response to a Critical Resource Shortage for which a response plan already exists; and
 - 10.1.2. Response to a Critical Resource Shortage for which a response plan does not already exist.
- 10.2. Modify plans, policies and process as appropriate based on findings of the exercise/drill.
- 10.3. Exercise Critical Resource Shortages at least once a year as part of the facility's semi-annual exercise.

Intra-Event/Response Phase:

Report Critical Resource Shortage:

11. A resource shortage is reported through the ICS to the person that the facility has designated in Section 4.1.2.

Determine Whether There Is An Existing Critical Resource Shortage Response Plan:

12. The person designated in Section 4.1.2 determines whether there is a pre-existing Critical Resource Shortage Response Plan to address the resource in question.
 - 12.1. If such a plan does exist:
 - 12.1.1. Determine whether the amount of remaining resource constitutes a Critical Resource Shortage (e.g. has the facility already exhausted all possible mitigation avenues?).
 - 12.1.2. If it is determined that there is a Critical Resource Shortage, implement the facility disaster plan (if it is not already activated) and the appropriate Critical Resource Shortage Response Plan, and notify the local EOC (if the facility has not done so already).
 - 12.1.3. Communicate implementation of the Critical Resource Shortage Response Plan to the medical staff and all personnel through pre-established EOP and ICS mechanisms.
 - 12.1.4. Conduct any appropriate and necessary “just-in-time” training as identified in Section 5.2.13.
 - 12.1.5. Monitor the level of resource and use of the Critical Resource Shortage Response Plan.
 - 12.1.6. Determine whether the Critical Resource Shortage Response Plan needs modification during the event and modify accordingly (See Section 4.1.7).
 - 12.1.6.1. During each operational period, the person(s) designated in Section 4.1.7.1 should review the Critical Resource Shortage situation, the use of the plan and the results, and make recommendations to the person(s) designated in Section 4.1.7.2.
 - 12.1.6.2. Evaluate whether there are any circumstances that were not contemplated and which require the plan to be modified.
 - 12.1.7. Terminate the Critical Resource Shortage Response Plan when the hospital is no longer experiencing shortage.
 - 12.1.8. Notify the EOC of termination of the Critical Resource Shortage Response Plan.
 - 12.2. If such a plan does not exist, see Section 13.

If a Plan Does Not Exist, Determine Whether A Critical Resource Shortage Exists:

13. Determine whether a Critical Resource Shortage exists.

13.1. Determine whether a specific resource is a “Critical Resource” by asking whether that resource is necessary to sustain human life, prevent permanent injury/disability or stabilize a patient experiencing a medical emergency?

13.1.1. If the answer is yes, then the resource is a Critical Resource.

13.1.2. If the answer is no, then the resource is not a Critical Resource and this Guidance is not applicable.

13.2. Determine whether a Critical Resource Shortage exists by asking whether the Critical Resource was depleted as a result of an Emergency/Disaster to the extent that the remaining resources will not allow the hospital to treat remaining patients in accordance with the traditional standard of care.

13.3. Validate reports of resource shortages.

13.4. Once validated:

13.4.1. Determine whether the shortage can be quickly mitigated by using resources from a sister facility, a neighboring facility (as identified by the RHCC or the EOC) or pursuant to an MOU.

13.4.2. If it cannot be mitigated:

13.4.2.1. Implement facility disaster response plan (if it has not already been implemented).

13.4.2.2. Notify the local EOC that Critical Resource Shortage Response Plans are being implemented (if the EOC has not already been notified).

13.4.2.3. Go to Section 14 to develop an ad hoc Critical Resource Shortage plan.

Develop Ad Hoc Critical Resource Shortage Response Plan:

14. Develop the ad hoc Critical Resource Shortage Response Plan. For critical shortages of material resources, refer to Section 14.2. For a critical shortage of physical space, refer to Section 14.3. For a critical personnel shortage, refer to Section 14.4.

14.1. Use the contact list created in Section 7.2 to convene the group which will create a Critical Resource Shortage Response Plan for those resources which have been depleted and for which no plan currently exists. [This will require identification of the specialties that will be affected by the Critical Resource Shortage so that the relevant clinicians can be contacted.]

Critical Shortage of Material Resources:

- 14.2. In developing the ad hoc Critical Resource response plan for a critical shortage of *material resources* (e.g. equipment, medications), the group should address the following issues.
- 14.2.1. What services will be impacted by the Critical Resource Shortage?
 - 14.2.2. How will these services change during the Critical Resources shortage?
 - 14.2.3. How will patients be triaged for the Critical Resource in question? What patients will receive the Critical Resource first, second, third, etc? Refer to the ethical principles established in Section 3.
 - 14.2.4. What criteria will determine whether the patient is given the Critical Resource? Is there any literature to guide the development of these criteria? See Appendix 3.
 - 14.2.5. What criteria will dictate that a patient should not receive the Critical Resource? Is there any literature to guide this decision? See Appendix 3.
 - 14.2.5.1. Refer to decisions made in Section 3.6 regarding those criteria that should not be used to justify withholding a Critical Resource from a patient.
 - 14.2.6. If applicable pursuant to your facility's established ethical principles as defined in Section 3.3 and to the Critical Resource in question, under what clinical circumstances will the hospital/provider withdraw the Critical Resource from one patient to give to another patient for whom use of the Critical Resource is more appropriate?
 - 14.2.7. Based on decisions made in Sections 3.4 and 3.5, what specific resources will be provided to those patients who will not receive the Critical Resource?
 - 14.2.8. If in Section 4.1.6.1, the facility decided to use a designated person(s) to make allocation decisions who is chosen based on the specific Critical Resource, who is the appropriate person(s) for this Critical Resource?
 - 14.2.9. Which types of providers (MDs, RNs, LPNs) will use the Critical Resource in question to provide care?
 - 14.2.10. What type of just-in-time training is needed to aid implementation of the specific Critical Resource Shortage Response Plan?
 - 14.2.11. What specific documentation is required to document services rendered pursuant to the Critical Resource Shortage Response Plan based on the definition of "essential documentation" determined in Section 4.1.10? How will this documentation be captured?

Critical Shortage of Physical Space:

- 14.3. In developing the ad hoc Critical Resource response plan for a critical shortage of *physical space*, the group should address the following issues.
- 14.3.1. What type of services will be impacted by the critical shortage of physical space?
 - 14.3.2. What alternative locations can be used to provide services to patients during the critical shortage?
 - 14.3.3. When choosing alternative locations, the following should be taken into consideration.
 - 14.3.3.1. What utilities (e.g. medical gases, electricity, water, communication capabilities) are needed? Are those already available in the alternative location? If not, can they quickly be made available in the alternative location?
 - 14.3.3.2. Are there any support services (e.g. OR recovery space) that need to be in close proximity to the service that is being displaced?
 - 14.3.3.3. For what is the alternative location space currently being used? Is there equipment, furniture, or people that will need to be moved from that space in order to use it?
 - 14.3.3.4. Will existing patients be transferred to the alternative location, or will only new patients be treated in the alternative location? If existing patients will be transferred, how will this be accomplished?
 - 14.3.4. Potential locations for alternative space may include administrative space, conference rooms, medical office buildings, or space where non-essential services have been discontinued for the duration of the Emergency or Disaster.

Critical Personnel Shortage:

- 14.4. In developing the ad hoc Critical Resource response plan for a *critical personnel shortage*, the group should address the following issues.
- 14.4.1. What services will be impacted by the critical personnel shortage?
 - 14.4.2. How will these services change during the critical personnel shortage?
 - 14.4.3. How will patients be triaged for the services provided by the critical personnel in question? What patients will receive services first, second, third, etc.? Refer to the ethical principles established in Section 3.
 - 14.4.4. What criteria will be used to determine whether the patient is treated by the critical personnel? Is there any literature to guide the development of these criteria? See Appendix 3.

- 14.4.5. What criteria will be used to determine that a patient should not be treated by the critical personnel? Is there any literature to guide this decision? See Appendix 3.
 - 14.4.5.1. Refer to decisions made in Section 3.6 regarding those criteria that should not be used to justify withholding a Critical Resource from a patient.
 - 14.4.6. For those patients who will not be treated by the critical personnel, will they be treated by another category of staff member in the facility?
 - 14.4.7. Can the number and type of delegable duties be expanded to help address the critical personnel shortage?
 - 14.4.7.1. Do your facility's policies limit licensed personnel's scope of practice more than that required by statute? If so, can the policies be amended during a critical personnel shortage to allow licensed personnel to do more? How, if at all, can licensed providers obtain expanded privileges during a critical personnel shortage to address the problem?
 - 14.4.8. Will a critical personnel shortage affect the ability to produce "essential documentation" as defined in Section 4.1.10? If so, what can be done to ensure that "essential documentation" is completed during the critical personnel shortage?
-
- 14.5. Once the group has developed an ad hoc Critical Resource response plan pursuant to Sections 14.2, 14.3 or 14.4, depending on the resource in question, it should be reduced to writing for easy dissemination.
 - 14.6. If the Medical Staff leadership is not represented in the ad hoc group, (s)he should be given a copy of the Critical Resource Shortage Response Plan for information purposes only.
 - 14.7. Present the plan to the appropriate governing body(ies) for approval.
 - 14.8. Inform medical staff and other appropriate personnel of the content of the ad hoc Critical Resource Shortage Response Plan through the mechanism developed in Section 4.1.11.

Implement Critical Resource Shortage Response Plan:

- 15. Implement the Critical Resource Shortage Response Plan pursuant to the mechanism created in Section 4.1.

Modify Critical Resource Shortage Response Plan:

- 16. Modify the Critical Resource Shortage Response Plan, if needed, pursuant to Section 4.1.6 and 12.1.6.

Terminate Critical Resource Shortage Response Plan:

17. Terminate the Critical Resource Shortage Response Plan pursuant to the mechanism created in Section 4.1.8 and 4.1.9.

Post-Event/Recovery Phase:

Psychological Support:

18. Provide psychological support services to employees, staff and physicians (refer to Section 4.1.13).

Evaluate Critical Resource Shortage Response Plans:

19. Evaluate the use and effectiveness of Critical Resource Shortage Response Plans and processes.

Modify Critical Resource Shortage Response Plans:

20. Modify plans and processes as appropriate based on actual experiences during the event.

Patient and Family Support:

21. Provide support and recovery services to patients and their families (refer to Section 4.1.13).

Appendix 1: Title 44 Definitions²

Communicable disease of public health threat: means an illness of public health significance, as determined by the State Health Commissioner in accordance with regulations of the Board of Health, caused by a specific or suspected infectious agent that may be reasonably expected or is known to be readily transmitted directly or indirectly from one individual to another and has been found to create a risk of death or significant injury or impairment; this definition shall not, however, be construed to include human immunodeficiency viruses or tuberculosis, unless used as a bioterrorism weapon.

Disaster: means (i) any man-made disaster including any condition following an attack by any enemy or foreign nation upon the United States resulting in substantial damage of property or injury to persons in the United States and may be by use of bombs, missiles, shell fire, nuclear, radiological, chemical, or biological means or other weapons or by overt paramilitary actions; terrorism, foreign and domestic; also any industrial, nuclear, or transportation accident, explosion, conflagration, power failure, resources shortage, or other condition such as sabotage, oil spills, and other injurious environmental contaminations that threaten or cause damage to property, human suffering, hardship, or loss of life; and (ii) any natural disaster including any hurricane, tornado, storm, flood, high water, wind-driven water, tidal wave, earthquake, drought, fire, communicable disease of public health threat, or other natural catastrophe resulting in damage, hardship, suffering, or possible loss of life.

Emergency: means any occurrence, or threat thereof, whether natural or man-made, which results or may result in substantial injury or harm to the population or substantial damage to or loss of property or natural resources and may involve governmental action beyond that authorized or contemplated by existing law because governmental inaction for the period required to amend the law to meet the exigency would work immediate and irrevocable harm upon the citizens or the environment of the Commonwealth or some clearly defined portion or portions thereof.

Local emergency: means the condition declared by the local governing body when in its judgment the threat or actual occurrence of an emergency or disaster is or threatens to be of sufficient severity and magnitude to warrant coordinated local government action to prevent or alleviate the damage, loss, hardship or suffering threatened or caused thereby; provided, however, that a local emergency arising wholly or substantially out of a resource shortage may be declared only by the Governor, upon petition of the local governing body, when he deems the threat or actual occurrence of such an emergency or disaster to be of sufficient severity and magnitude to warrant coordinated local government action to prevent or alleviate the damage, loss, hardship, or suffering threatened or caused thereby; provided, however, nothing in this chapter shall be construed as prohibiting a local governing body from the prudent management of its water supply to prevent or manage a water shortage.

² These definitions have been revised for consistency with recently approved legislation (HB 403) which will go into effect on July 1, 2008.

Major disaster: means any natural catastrophe, including any: hurricane, tornado, storm, high water, wind-driven water, tidal wave, tsunami, earthquake, volcanic eruption, landslide, mudslide, snowstorm or drought, or regardless of cause, any fire, flood, or explosion, in any part of the United States, which, in the determination of the President of the United States is, or thereafter determined to be, of sufficient severity and magnitude to warrant major disaster assistance under the Stafford Act (P.L. 93-288 as amended) to supplement the efforts and available resources of states, local governments, and disaster relief organizations in alleviating the damage, loss, hardship, or suffering caused thereby and is so declared by him.

Appendix 2: Examples of Critical Resources

- Ventilators
- Operating Rooms
- Blood
- Oxygen
- Anti-virals
- Burn care kits
- Suture kits
- IVs
- Morphine
- Defibrillators
- Negative Pressure or HEPA-filtered Isolation Spaces
- Antibiotics
- PPE
- Linens
- Imaging Devices
- Beds
- Chest tubes
- Code carts
- Normal saline
- Splints
- Operating Rooms
- Respiratory Therapists

Appendix 3: Critical Resource Shortage Planning Literature

- AHRQ's *Altered Standards of Care in Mass Casualty Events* (April 2005)
- HHS *Pandemic Influenza Plan* (November 2005)
- Institute of Medicine's *Modeling Community Containment for Pandemic Influenza: A Letter Report* (2006)
- Institute of Medicine's *Reusability of Facemasks During an Influenza Pandemic: Facing the Flu* (2006)
- WHO *Rapid Advice Guidelines on Pharmacological Management of Humans Infected with Avian Influenza A (H5N1) Virus* (2006)
- WHO's *Global Consultation on Addressing Ethical Issues in Pandemic Influenza Planning* (October 2006)
- AHRQ's *Providing Mass Medical Care with Scarce Resources: A Community Planning Guide* (November 2006)
- Ontario Health Plan for Influenza Pandemic's *Development of a Triage Protocol for Critical Care During an Influenza Pandemic* (November 2006)
- CDC's *Interim Pre-pandemic Planning Guidance: Community Strategy for Pandemic Influenza Mitigation in the U.S. – Early, Targeted, Layered Use of Nonpharmaceutical Interventions* (February 2007)
- New York Department of Health's *Allocation of Ventilators in an Influenza Pandemic: Planning Document* (March 2007)
- North Carolina Institute of Medicine's *Stockpiling Solutions: NC's Ethical Guidelines for an Influenza Pandemic* (April 2007)
- CDC and DHHS' *In a Moment's Notice: Surge Capacity for Terrorist Bombings – Challenges and Proposed Solutions* (April 2007)
- WHO *Interim Protocol: Rapid Operations to Contain the Initial Emergence of Pandemic Influenza* (May 2007)
- California Department of Health Services' *Development of Standards and Guidelines for Healthcare Surge during Emergencies* (mid 2007)
- Security and Prosperity Partnership of North America's *North American Plan for Avian & Pandemic Influenza* (August 2007)
- GAO's *Influenza Pandemic: Opportunities Exist to Address Critical Infrastructure Protection Challenges That Require Federal and Private Sector Coordination* (October 2007)
- CDC's *Proposed Considerations for Antiviral Drug Stockpiling by Employers in Preparation for an Influenza Pandemic* (draft, October 2007)
- CDC's *Proposed Guidance on Antiviral Drug Use Strategies During an Influenza Pandemic* (draft, November 2007)
- OSHA's *Guidance on Preparing Workplaces for an Influenza Pandemic* (2007)
- OSHA's *Pandemic Influenza Preparedness and Response Guidance for Healthcare Workers and Healthcare Employers* (2007)
- ACLU's *Pandemic Preparedness: The Need for a Public Health – Not a Law Enforcement/National Security – Approach* (January 2008)

- CDC's *Influenza Pandemic Operation Plan* (January 2008)
- Task Force for Mass Critical Care Summit Report, published in *Chest* (May 2008)
- Harvard School of Public Health and Massachusetts Department of Public Health Altered Standards of Care Survey (current in process)