



Maryland Framework for the Allocation of Scarce Life-sustaining Medical Resources in a Catastrophic Public Health Emergency

August 24, 2017

Project Team

Lee Daugherty-Biddison, MD
Howard Gwon, MS
Alan Regenberg, Mbe
Monica Schoch-Spana, PhD
Eric Toner, MD

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Executive Summary

During most disasters, the sick and injured can be cared for by the existing healthcare system — augmented by local, state and federal resources—without major alterations in the standard of care. However, some large-scale disasters could overwhelm all available medical resources in certain locations for a period of time. In such catastrophic events, there may not be enough medical resources for all who need them despite all reasonable efforts to augment medical surge capabilities and implement crisis standards of care. Some jurisdictions and entities have provided guidance regarding how scarce medical resources should be allocated, but relatively few have taken into account the values of the communities in which those decisions would be implemented.

This document summarizes the findings of a 5-year, multi-institutional effort to understand the values of Maryland citizens regarding the allocation of scarce critical care resources, and outlines a framework for mechanical ventilator allocation for the state of Maryland. In addition to the development of the attached framework, the goals of this project were to foster development of disaster response coalitions among healthcare institutions and government agencies and to promote public trust in response planning through transparent public dialogue.

The following guidance is outlined in this document:

1. A framework to allocate medical resources when all medical resources are exhausted, including ethical rationale and discussion of special considerations
2. A triage team structure and process, to implement and oversee the implementation of the framework, at both the hospital and state levels
3. Legal, liability protection, and appeals process
4. A risk communication process for all sectors that incorporates the values of Maryland citizens and discusses how they should be informed about state wide framework development

1. Goals and Objectives of this Framework

The purpose of the document is to describe principles and procedures to be used to allocate scarce life-sustaining healthcare resources during a catastrophic public health emergency in Maryland in which needs far exceed resources. The aim of these procedures is to allow the fair and ethical distribution of critical care resources among multiple parties with competing appropriate claims on those resources and to do so in accordance with state law and regulations. Further, this document addresses circumstances in which real-time reassessment and revision of the allocation approach outlined herein may be appropriate.

This framework is meant to be implemented only during a major mass casualty event, during which the Governor has issued an appropriate declaration of a catastrophic health emergency as well as an accompanying order to implement scarce resource allocation procedures. This should occur only when all efforts to expand the supply of the resource in question have been exhausted. It also assumes other aspects of critical care capacity needed to care for the patients are available. For example, there may be no need to allocate scarce ventilators if there is no healthcare capacity to operate ventilators. This framework is not intended to be used for shortages of certain medical resources that occur on a day-to-day basis in the absence of a declared emergency. It is also not intended to apply to resources that are in use for chronic patients outside of acute care hospitals; for example, nursing home or home ventilators or outpatient dialysis.

2. Background, Policy Context, and Formative Research

The threat of a catastrophic public health emergency such as a severe influenza pandemic or other sudden crisis causing life threatening illness or injury on a massive scale has prompted extensive federal, state, and local preparedness efforts. Although the United States healthcare system is very large, its surge capacity (the capacity to rapidly absorb additional patients) is limited, especially for critical care. Modeling studies suggest that an influenza pandemic similar to that of 1918 would require intensive care unit (ICU) and mechanical ventilation capacity that is many orders of magnitude greater than what is available.¹ Even a less severe epidemic could overwhelm critical care capacity given that ICUs operate at greater than 65% occupancy on average,² with ICU occupancy at larger hospitals running much higher.

Several groups have published recommendations for allocating life-support measures during a public health emergency. Ethical considerations are inherent in any such allocation process. The guidelines differ substantially regarding which ethical criteria would be determinative, whether some groups of patients should be categorically denied access to life support (exclusion criteria), and whether it is permissible to withdraw a resource from one patient to provide it to another who is more likely to benefit.^{3,4,5,6} Ethical principles that have been suggested in published guidelines include saving the most lives, saving the most life-years, and the life cycle principle, which uses age as a criterion. To date, public engagement on which ethical principles should guide allocation decisions has been limited to either polling of diverse but likely non-representative samples of the public or to feedback on an already developed allocation framework.^{3,7,8}

Public discussion about allocation in emergencies is critical because:

- (1) the public will bear the consequences of these decisions,
- (2) the public's values are central to choosing among multiple ethically-permissible approaches to allocating scarce life-sustaining resources,

- (3) a successful allocation effort will require public trust and cooperation, both of which are more likely if the development process has been transparent and inclusive, and
- (4) knowledge of public perspectives and moral points of reference better prepares health authorities to develop appropriate preparedness plans and allocation guidance and to communicate well on potentially charged issues.

Moreover, advanced discussion and planning are essential because in-depth deliberations will not be feasible during a public health crisis.

In order to better understand community values related to allocation of scarce lifesaving resources, a community engagement effort was conducted in Maryland. In health policy and other arenas, community engagement has been carried out using varying methodologies at different points in policy development. Both timing and methodology can influence public feedback on complex issues. On a few occasions, public input has been solicited in advance of policy development to allow the “voice of the people” to shape initial policy.⁹ To optimize conditions for early public input, the Deliberative Democracy methodology was used to gain feedback from members of the Maryland lay public, healthcare and disaster professionals. This methodology requires citizen participation in open and informed conversations, bringing multiple perspectives into the discussion and dialogue on the best information available.¹⁰

Community engagement forums were conducted across the State over a two-year period (May 2012 to May 2014). At least one forum was held for laypersons and one for healthcare and disaster workers in each Maryland Emergency Management Region. Primary data sources were pre- and post- deliberation surveys and the notes on small group deliberations compiled by trained note takers. Data were also available from exit interviews completed with a subset of participants who provided feedback on the forum process and their understanding of the issues.

Eight lay forums, including two pilot forums, and seven expert forums were conducted with a total of 324 participants. After preliminary results were compiled, two expert working group meetings, composed of practitioners, ethicists, public health lawyers, and communication specialists, were convened in January and March 2015. The purpose of these working group sessions was to elicit expert input on the interpretation of emerging themes and to translate the findings into recommendations. These recommendations were used to generate the framework below and are summarized in the following section.

3. Evidence base and rationale for the framework

Public engagement for the purpose of gaining deeper understanding about views and preferences is, on its own, insufficient for determining what ought to be done when confronted with ethical challenges in any particular context. Exercises like public polling cannot independently illuminate the most ethically appropriate path forward. Public opinion varies across populations and over time, and as such, it does not necessarily reflect what ought to be done.

Nevertheless, public engagement is invaluable for identifying both what a careful conceptual analysis may have gotten right and the issues and ideas that may have been undervalued or overlooked. Public engagement can identify places where resources may be required to overcome particularly challenging

obstacles. In addition, broad public engagement, particularly when it occurs early in the process of policy-making, can raise awareness, promote transparency, and enhance trust.

As noted above, to explore the challenges related to allocating scarce, life-sustaining resources during a disaster, 15 community engagement sessions were convened using adapted Deliberative Democratic methods. Table 1 lists the six ethical principles discussed in the forums.

Table 1. Allocation principles discussed in the community engagement forums

Principle		Description
Fair chance	First-come, first-served	Patients are given ventilators in the order in which they are diagnosed until no ventilators remain. This is a continuation of standard practice.
	Lottery	Patients are assigned a number. Healthcare providers select a random number and give the ventilator to the patient with that number.
Prognosis for short-term survival		Patients with the best chance of surviving their current illness are given priority over those less likely to survive.
Prognosis for long-term survival		Patients who are likely to survive the most number of years are given priority. Underlying illnesses the patient already has are considered.
Life-cycle		Patients who have lived through the fewest stages of life, from youth to old age, are given priority.
Value to others in a pandemic		The patients most likely to have an immediate impact on society—first responders, clinicians, or vaccine workers—are given priority.

Discussions during the forums support the acceptability of allocation frameworks that appeal to multiple principles and a hierarchical response triggered by feasibility of implementing various principles.

From the qualitative analysis of the 15 community engagement sessions, 10 major themes emerged: (below examples are taken directly from notes compiled in real time during the engagement sessions. Every effort was made to reflect the statements of participants as precisely as possible, but verbatim transcription was not performed.)

- Finding 1: Participants emphasized the importance of transparency and public awareness around efforts to develop and implement an allocation framework.
 - *Whatever gets put in place, there needs to be education. The community, their families, they all need to understand what's going on.*
- Finding 2: Participants sought to solve the scarcity problem through “technological fixes” (e.g., creating more ventilators) before being willing to face the moral dilemma posed by the scenario.
 - *Can't patients share or take turns on a ventilator?*
- Finding 3: Participants debated the feasibility of implementing any single ethical principle on its own and were open to using a combination of principles, tailoring allocation decisions based on the dynamic conditions of an influenza pandemic.

- *You will need to be able to shift and change depending on the context, depending on how bad things are.*
- Finding 4: Participants emphasized the importance of planning, coordination, and communication about the framework across the state in advance of crisis.
 - *I would want a hard and fast set of rules that we could all know and follow so there is consistency and accountability.*
- Finding 5: Many participants expressed a desire to reallocate a scarce medical resource to a loved one or to someone in greater need. Additionally, participants expressed strong concerns about the fate of those who did not receive critical resources, expressing a need for clear, specific plans for how to treat these individuals.
 - *I would give it up to someone else's grandchild expecting maybe someone would do the same for mine.*
 - *If not supporting [them] any more. Do we take [them] away and make them comfortable?*
- Finding 6: Many participants expressed concerns that health care providers may make biased allocation decisions, and professional participants, while seeing the limitations of decision support tools, often pondered how to retrofit existing triage protocols and scoring systems for allocation purposes.
 - *Much easier to work with hard numbers than make value judgments on the ground.*
- Finding 7: Participants worried that emergency allocation decisions would replicate existing inequities (e.g., insured vs. uninsured, urban vs. rural), and some expressed concerns over certain perceived “undesirable” groups (e.g., prisoners, undocumented immigrants) receiving resources before “more deserving” others. Equity and preferential treatment issues were often framed in concrete local terms, with Maryland-specific points of reference, such as not wanting people from West Virginia or Pennsylvania to have access to Maryland ventilators.
 - *If you don't have insurance, you won't get [the vent].*
 - *We have to look into the value of people in society. Prisoners, for example, should not be prioritized.*
- Finding 8: Participants expressed concerns over the ability of some to “game” the system (e.g., buying a resource, manipulating facts about a patient's medical history) and reiterated that access to resources should be based on need rather than wealth, political pull, or favored social status.

- *[There are] those people who have always thought they could buy anything they want... And somewhere down the road, that will happen and what is in place has to apply to them too.*
- Finding 9: Participants expressed concern over the concept of withdrawing a ventilator from one patient to reallocate it another patient who is a better candidate (by whatever criterion). Lay participants expressed significant concern about moral acceptability of reallocating a ventilator, especially if a patient were not continuing to deteriorate while receiving that support. Professionals tended to worry about the emotional, psychological, and moral distress of withdrawing a ventilator, as well as the legal ramifications of doing so.
 - *Doesn't it go against the Hippocratic oath? They're supposed to save lives, not take lives. [Layperson]*
 - *Can the healthcare professional override the wishes of the patient or family? [Provider]*
- Finding 10: Participants worried about the emotionally wrenching aspects of allocating scarce medical resources. Among the traumatized would be: the person passed over and his/her family; the family of the failing patient from whom a ventilator needs to be withdrawn; and the provider who has to choose one recipient over another or to see his/her patient passed over.¹¹

In response to these findings and a review of relevant guidance, the following recommendations were proposed, and these have guided the allocation framework.

We recommend a multi-principled approach to allocating life-sustaining measures that strives to save the most lives, preserve the most life years, prioritize evidence-based decisions, and show compassion to non-recipients. Authorities should adopt a multi-principled approach to allocating scarce life-saving measures that is built on the foundational principles of both saving the most lives and saving the most life years. Additional principles may increase in importance in situations where practical hurdles limit efforts to allocate resources in a manner that can be guided by these two principles. For instance, when patients cannot be clearly distinguished on the basis of anticipated short- or long-term survival, we recommend that scarce life-saving resources be allocated by chance (lottery) rather than by a first-come, first served basis whenever possible, recognizing that a lottery can only apply to those patients then present and in need of ventilation and that patients arriving later would have a different chance at receiving a ventilator. To limit potential bias when using clinical judgment alone, any allocation framework that includes clinical assessments (rather than a simple lottery, for example) should, whenever possible, be built on objective data (e.g., laboratory test results or clinical measurements) and evidence-based research on predicting clinical outcomes. Patients who do not meet criteria to receive critical care should be provided other available therapies including appropriate palliative measures, with the clear understanding that active life-ending procedures do not fall within the bounds of appropriate palliative care. (Findings 3, 5, and 6). Until a reasoned judgment can be made by the Triage officer, first responders and bedside clinicians should perform the immediate stabilization of any patient in need of critical care as they would under normal circumstances (up to and including intubation for those in respiratory distress, in the event that the crisis involved a respiratory illness). Along with stabilization, temporary support may be provided (e.g. bag valve mask for ventilation) until the Triage officer can assess the patient for critical resource allocation. Every effort should be made to complete the initial triage assessment within 90 minutes of the recognition of a need for the scarce resource.

We recommend that an allocation framework be implemented equally and transparently across a state's jurisdictions and health entities, with monitoring to assure uniformity and responsiveness to real-time events. The implementation of a framework for the allocation of scarce resources in the setting of absolute scarcity should be done on a statewide basis (or regional where appropriate) and with the cooperation of all related jurisdictions and the health care sector. Hospitals and healthcare systems should clearly communicate to both personnel and patient communities the process for triage of critical resources under scarcity conditions. During a crisis, the framework's implementation should be monitored across the state in as uniform and transparent a fashion as possible. Further, specific means should be set out in advance of a disaster to allow for the modification of the allocation framework in real time, in the event that disease specific findings suggest that framework changes are warranted. Pre-crisis preparations should include alerting the public to the potential need to deviate from a planned framework, based on real-time experiences during the disaster. (Findings 1, 4, and 8).

We recommend that any decision to remove one patient from ventilator support to reallocate it to another person be approached with caution, given that many people view this practice as morally ambiguous. Reallocation may be essential to an effective allocation framework because without it no ventilators would be available for later patients regardless of their condition or the ethical principles being applied; but this approach should be considered very cautiously. Criteria for reallocation in this context should be consistent with criteria for withholding mechanical ventilation and should also incorporate both a demonstration of lack of improvement while on ventilator support and the ability to provide alternate levels of patient care. Further, healthcare workers (HCWs) who are involved in the removal of mechanical ventilation will need considerable emotional, administrative and legal support/protection. (Findings 9 and 10).

We recommend that authorities openly share allocation dilemmas with the public and communicate early, frankly, with empathy, and in terms that resonate with local audiences. To build public confidence and trust before and during a crisis, authorities should be explicit, open and honest in addressing the challenges of developing and implementing a framework, and they should be mindful of issues that are already salient for the public. Health officials, political leaders, hospital presidents, chief medical officers, and practitioners should recognize that people often understand ethical dilemmas in terms of their own place-based experiences and perspectives, and they should be prepared to discuss issues of fairness in concrete local terms as well as in the abstract. Authorities should acknowledge the impulse for people to forego their own needs and pass along a scarce medical resource to a loved one, while explaining why this compassionate practice cannot take place during the health disaster. During a disaster, if all patients in need of critical care resources are to be subject to the same allocation framework regardless of the cause of their critical illness, then explicit public discussion should occur regarding the implications of this approach. Public officials/leaders should establish a diverse community advisory group as a way of expanding and institutionalizing community input on these issues and increasing buy-in from various communities across the state. (Findings 2, 5 and 7).

To date, IOM and ACCP guidance has dominated professional discourse on this topic.^{12,13} It is reassuring to note that these formal documents reflect many of the same values articulated by study participants. Nonetheless, some participants articulated values that were not entirely consistent with key portions of these documents. Notable divergences included the distinction between withdrawing and withholding a life-saving resource and the strong desire to pass along a scarce resource to a loved one. Experts consider withholding and withdrawing to be ethically equivalent; however many participants did not agree. Likewise, experts dismiss the possibility of passing on a resource to another specific person. These points of difference require deeper consideration, as they signal potential tensions with the moral

convictions of some citizens. Moreover, where formal guidance has espoused principles such as fairness in the abstract, many participants expressed them in more concrete experiential terms including fears that allocation decisions will follow locally known patterns of inequity. The finding of local ethical “dialects” suggests the potential need for policymakers to communicate the rationale for an allocation framework in terms that are salient for specific audiences.

4. Generalizability of an Allocation Framework

The Maryland community engagement efforts described above focused exclusively on the issue of allocation of mechanical ventilators in a severe influenza pandemic; however, to be most useful a statewide framework for scarce resource allocation in a disaster should be more broadly applicable. Extrapolating from the findings of the Maryland community engagement efforts and those of others who have worked on scarce resource allocation requires consideration of both the types of events that could overwhelm available capacity and the types of life-sustaining resources that may be scarce. The Maryland law that directly addresses scarce resource allocation, however, refers specifically to a “biological agent capable of causing extensive loss of life or serious disability;” therefore, although the principles considered in this document could apply to a spectrum of events, the allocation framework only applies to biological events (see legal issues section below).

a. Types of Events

A variety of events could overwhelm the local, regional or national healthcare system leading to at least transient, if not persistent, scarcity of some life-sustaining resources. Non-biological events, including toxic chemical release, nuclear attack, and massive earthquake, can result in such scarcity. Given the focus of this framework, however, the most pertinent examples are infectious diseases and bioweapons.

Infectious diseases

A severe influenza pandemic is characterized by being geographically widespread at or about the same time and having a high fatality rate. This implies many people will require intensive care and that outside help—either in terms of resources that can be brought in or opportunities to transfer patients out to other sites of care—will be limited. Influenza is unique in that it spreads very quickly and mutates rapidly so that there is limited immunity in the population. Although few other diseases spread in the community with the rapidity of influenza or have the same tendency to cause recurring pandemics, one could imagine that a mutated form of some other respiratory viruses such as a coronavirus (MERS and SARS), or an adenovirus (adenovirus 14) might be able to cause a pandemic.

Bioweapons

It is also conceivable that highly contagious but normally mild pathogens, such as rhinoviruses that cause common colds or respiratory syncytial viruses that cause bronchiolitis in small children, could be genetically manipulated to express greater virulence. Other contagious infectious diseases could also cause a widespread epidemic with high lethality. Smallpox and the viral hemorrhagic fevers (Ebola and Marburg) which are spread primarily by direct contact can cause epidemics if proper precautions are not taken. These highly lethal pathogens are more likely to cause an epidemic if they are genetically modified to be more transmissible by a respiratory route. Other pathogens that are not highly contagious could cause severe local epidemics if deployed as biological weapons in a wide area aerosol

release. This could overwhelm medical resources especially if there was a campaign of multiple attacks in different locations.

b. Types of Resources

The Maryland effort to date has focused exclusively on mechanical ventilators because their need is so stark. A patient who truly needs a ventilator will likely die without it, but if given one, these patients (depending on their underlying condition) can be expected to survive following a period of ventilator support. There are a number of other medical services or technologies that can be similarly life-sustaining in certain large scale disasters and that might be in scarce supply. These resources have several key characteristics in common: there is no significant excess capacity, there is no feasible alternative, and they cannot be quickly manufactured.

Mechanical ventilators

A mechanical ventilator is essential to sustaining life in cases of severe lung injury whether caused by influenza, another type of lung infection, a toxic injury (e.g., chemical), or due to systemic inflammatory reactions that can occur related to shock. It can also be life-sustaining in cases of neuromuscular paralysis such as with botulinum toxin.

Oxygen

In most cases, mechanical ventilation is of limited value without a supply of supplemental oxygen. Some patients may need supplemental oxygen without a ventilator. Although there is a large capacity of oxygen, the supply is finite and can be temporarily exceeded.

Renal dialysis

Kidney failure can occur in a variety of severe illnesses or injuries including overwhelming infections or injuries (e.g. crush injuries that might be seen as a result of an earthquake). In some cases, this may be transient and require temporary dialysis; in other cases, it may be permanent requiring chronic dialysis. In either case, dialysis capacity is finite and many patients with acute renal failure cannot survive without it.

Blood products

Victims of severe physical trauma may have severe blood loss and require whole blood, plasma or other blood products to survive. Some patients with severe infections or toxic exposures may also require certain blood products.

Supportive critical care

Regardless of the cause—whether severe infection or severe injury—many patients can be saved by sophisticated intensive care but would die without it. In addition to mechanical ventilation and renal dialysis in some cases, this includes specialized care such as invasive monitoring and medications to support blood pressure provided by a team of intensivists, intensive nursing, and other collaborating specialties.

Surgery

In an event with an overwhelming number of severe injuries, such as an earthquake, the capacity for lifesaving surgery is likely to be inadequate. In this scenario, both surgeons and functional operating rooms are likely to be scarce, especially for highly specialized surgery such as neurosurgery or burn care.

Summary

Because we are cognizant of the specific language in Maryland law most pertinent to scarce resource allocation, this framework only applies to biological events. Nevertheless, the principles and processes presented here could be applicable to a variety of catastrophic events that cause widespread severe illness or injury and consequent shortages of life-sustaining resources. We recommend that the State examine the law applicable to non-biological emergencies to determine whether legislative changes would be needed to use this framework in those situations.

5. Strategies to avert the need for implementation of the framework

Implementation of the framework should only be triggered when the supply of a particular life-sustaining resource is exhausted and timely resupply from vendors, other healthcare organizations, and state and national sources (e.g., the National Strategic Stockpile) is impossible. Careful planning and detailed preparations may help avert the need for implementation of this framework. Key operational strategies include the expansion of acute and critical care capacity in hospitals and other facilities that may be able to provide patient care for mass casualty incidents (MCIs). Strategies for expanding capacity, Crisis Standards of Care, include, but are not limited to:

1. Surge capabilities and alternate care space
2. Tiered staffing models
3. Repurposing of critical care equipment
4. Mutual aid and/or memoranda of understanding to provide/receive space, stuff and/or staff
5. Transfer of patients to other facilities having capability
6. Alternative therapies

Successful management of an MCI requires planning to develop, coordinate and implement pre-established processes, plans, and procedures in an efficient and effective manner to minimize loss of life, maintain control, and avert or delay the implementation of a decision framework to allocate scarce medical resources.

Planning for a catastrophic event requires extensive collaboration at multiple levels. Within each healthcare organization, it involves collaboration among subject matter experts (e.g., intensivists, critical care nurses, respiratory therapists, pharmacists, emergency managers, first responders, etc.), direct care providers, ethicists, and legal counsel. It also requires collaboration within and between health care coalitions.¹⁴ Healthcare coalitions/regions should share plans with other regions across the state as a way to identify best practices and facilitate efficient coordination and, when indicated, diversion and mutual aid. In addition, the Maryland Hospital Association should be utilized as means of collaboration across all hospitals, as well as with key public health agencies, in the state.

Region III Health and Medical Coalition has developed plans and a process for maximizing surge capacity through a sequence of actions, see appendix A.

6. Framework

The scoring system outlined here is intended to assist Maryland hospitals and public health agencies in their response to a declared catastrophic health emergency in which there has been an order to implement scarce resource allocation procedures. The implementation of this guideline will occur across the entire state of Maryland as uniformly as is possible.

The system is based primarily on two considerations: 1) likelihood of short-term survival (with the treatment/support of the scarce resource in question and other intensive care services), and 2) likelihood of long-term survival (based on presence of co-morbid conditions). Individual scores (1-4 for short-term; 0 or 3 for long-term) are assigned for each consideration and then added together to produce a total (minimum 1, maximum 5). Priority will be given to those with the lowest scores. In the event that there is a “tie,” age may be considered as a criterion as outlined below.

The scoring system applies to allocation and reallocation of all life-sustaining medical resources which are then in critically short supply, regardless of initial indication for the resource. For example, in the setting of a severe pandemic those patients with respiratory failure due to influenza will be scored on the same scale as those needing a ventilator for another reason. In the case of ventilators, all patients who are allocated a ventilator will be allowed a minimum therapeutic trial of a duration to be determined by the central triage committee based on epidemiologic pattern of the disease in question. For example, in the case of a novel respiratory pathogen, if all patients who survive require at least four days on a ventilator, then a trial period would be set at a minimum of four days. This minimum trial would be allowed unless a precipitous decline in clinical status over a shorter period indicates to the triage team that prognosis is exceptionally poor. Time-limited therapeutic trials would apply to many, but not all, conceivable life-sustaining resources and the duration of the therapeutic trial may differ between resources (e.g., ventilator vs dialysis) and also differ for the same resource between the patients with different underlying conditions. For example, the appropriate duration of mechanical ventilation for patients having undergone emergency surgery may not necessarily be the same as for influenza patients. Such judgments will need to be made by the triage team.

This scoring system is not a fixed allocation rule, nor can the criterion for a therapeutic trial of ventilator effectiveness be fixed in advance. The implementation of this scoring system will be overseen by a Disaster Triage team (DTT) at each hospital. The makeup of the DTT is outlined below. It is understood that the DTT, with oversight by the Triage Review Committee, may need to make adjustments in critical care resource management as experience with the disaster accumulates over time.

As previously mentioned, it is important to note that first responders and bedside clinicians should perform the immediate stabilization of any patient in need of critical care as they would under normal circumstances (up to and including intubation for those in respiratory distress, in the event that the crisis involved a respiratory illness). Along with stabilization, temporary support may be offered (e.g. bag valve mask for ventilation) until the Triage officer can assess the patient for critical resource allocation. Every effort should be made to complete the initial triage assessment within 90 minutes of stabilization of the recognition of the need for the resource.

Guiding Ethical Principles and Special Considerations

Prospects for short-term survival: The most critical and straightforward measure of whether a patient will benefit from intensive care is whether a patient survives as a consequence of this care. Patients who

are more likely to survive with intensive care are therefore given a higher priority when resources are scarce, compared to patients who are less likely to survive with intensive care. The Sequential Organ Failure Assessment (SOFA) score and the Pediatric Logistic Organ Dysfunction (PELOD) score are scoring systems that have been developed to predict mortality over the short-term. Scoring quartiles for SOFA/PELOD scores are based on in-hospital mortality results from current literature.^{15,16}

Prospects for long-term survival: Also related to how much medical benefit intensive care produces is the patient's prospects for survival after successful discharge. Some patients suffer from medical conditions that are likely to shorten their life spans (compared to healthy, age-matched individuals) even if the immediate medical problems that required intensive care are successfully treated. Although important, placing too great a priority on the criterion of long term survival may, in certain circumstances, further disadvantage people who are already disadvantaged; poor people and people of color are more likely than other groups in society to have multiple and serious co-morbidities because of poorer access to medical care and because of the direct debilitating effects of poverty on health.

Because of concerns about compounding injustices associated with systematic disadvantage and the arbitrariness of co-morbidities, unlike other algorithms that have been proposed for ICU triage in a disaster, the scoring system to be used here does not distinguish between one and multiple co-morbidities or between mild and moderate co-morbidities. Patients whose co-morbidities are so serious that they are expected to live no more than 12 months even with successful ICU treatment are assigned a score of 3.

Age-related considerations: Whether age should be taken into account in the allocation of health care resources is an ethically challenging issue. Although the State of Maryland does not consider age an appropriate criterion in determining who receives access to basic medical care during normal circumstances, ethical considerations point to different conclusions when confronted with a severe shortage of life-sustaining resources. Under such constrained circumstances and if chance of survival and long-term positive outcome are deemed comparable, different stages of life should be given differential priority in allocation decisions. Although, arguably, all people stand to lose the same thing should they die—the rest of their lives— younger people have had less of an opportunity to experience life than older patients. Also, although social worth or contribution should not be considered in the allocation of scarce medical resources, prioritizing children over the generation on whom they are directly dependent for their basic welfare is morally problematic. For these reasons, highest priority in this scoring system is given to children, for whom death would come tragically early without intensive care, and to adults through age 49, who would also have foreshortened life spans and whose death is most likely to impose suffering and hardship on other people whose well-being depends directly on their care and support (children, elderly relatives). Adults who have not yet lived a full life (50-69) are given next priority, followed by those who are approaching or have reached the high end of average life expectancy (70-84). Lowest priority is given to patients 85 and over in order to give other patients the same opportunity to live a full life that these patients have already experienced.

Pregnancy: Pregnancy is a unique state in which medical decisions have a direct effect on the health of and prospects for survival of not only the pregnant woman who is the patient but also the fetus she is carrying. The scoring system cannot take into account the complex moral and medical considerations this unique relationship poses. For example, patients more advanced in pregnancy tend to have a poorer prognosis with intensive care than patients earlier in pregnancy. Every week of survival of the pregnant patient past the point of fetal viability significantly increases the likelihood that the fetus will survive and be healthy. At the same time, earlier delivery of the pregnant patient may increase her own chances of

survival. Thus, what is most beneficial for the pregnant patient may not be beneficial to the fetus, and vice versa. In addition, decisions about critically ill, pregnant patients affect not only the allocation of scarce mechanical ventilators that are suitable for use with adults and children, but also special ventilators that are specifically for premature infants. These neonatal ventilators are not included in this schema but may also be in short supply. Thus, decisions about assigning mechanical ventilators to critically ill pregnant patients may have implications for the demand for neonatal mechanical ventilators.

Pregnant patients will be assigned a priority score based on the same framework used for non-pregnant patients. If a pregnant patient is in the third trimester, obstetrical evaluation of fetal health by heart tones should be performed urgently. Those individuals with a healthy fetus based on this evaluation will be given a one point “credit” (reduction) toward their priority score. The triage team will operate under the general presumption that the pregnant patient’s priority score in this framework should not be modified if the prospects of survival for either the pregnant patient or the fetus are poor.

Fair Chance: After the various criteria above (long and short prognosis, age and pregnancy) have been applied it is likely that there will be some (perhaps many) patients who remain in the same priority “bin”; in other words, the criteria do not indicate a clear priority. In these cases, the scarce resource should be allocated based on chance in a fair and transparent way. This might mean first-come, first-served or some form of lottery.

Exclusion Criteria: In the event of a declared catastrophic public health emergency with an associated Governor’s order to implement this framework, a certain number of conditions would make an individual ineligible for the life-sustaining critical resource in question. Those conditions include:

1. Cardiac arrest: unwitnessed, recurrent, or unresponsive to defibrillation or pacing
2. Advanced and irreversible neurologic event or condition (e.g. massive subdural)
3. Severe burns in patient with both of the following:
 - a. Age > 60 yr.
 - b. 50% of total body surface area affected¹⁷

Proposed Strategy for Ventilator Allocation in Epidemics of Novel Respiratory Pathogens					
Principle	Specification	Point System			
		1	2	3	4
Prognosis for short-term survival	Adults (SOFA) or Peds (PELOD-2)	SOFA score ≤ 8	SOFA score 9–11	SOFA score 12–14	SOFA score >14
		PELOD-2 ≤ 12	PELOD-2 12-13	PELOD-2 14-16	PELOD-2 ≥ 17
Prognosis for long-term Survival	Prognosis for long-term survival (assessment of comorbid conditions)			Severe comorbid conditions; death likely within 1 year	
Secondary Consideration					
Life-cycle Considerations	Prioritize those who have had the least chance to live through life's stages (age)	Age 0-49 y	Age 50-69 y	Age 70-84 y	Age ≥85y

Examples of severe co-morbid conditions with associated life expectancy of less than 1 year are listed below:

1. New York Heart Association (NYHA) Class IV heart failure
2. Advanced lung disease with FEV1 < 25% predicted, TLC < 60% predicted, or baseline PaO₂ < 55mm Hg
3. Primary pulmonary hypertension with NYHA class III or IV heart failure
4. Chronic Liver Disease with Child-Pugh score > 7
5. Severe trauma
6. Advanced untreatable neuromuscular disease
7. Metastatic malignant disease or high-grade primary brain tumors

This list is meant as a guideline and is not exhaustive. Patients meeting the criteria of < 1 year predicted survival based on what of the listed or other similar conditions should be assigned a score of 3.

*Persons with increasing scores on this triage scale at 24, 48 or 120 hours will have an additional point added to their total score. Those with scores that remain unchanged at 120 hours will also have an additional point added to their score.

Sample Cases

1. Patient A, 24 years of age, has a SOFA score of 13, and no severe comorbid conditions resulting in likely death within 1 year. Patient B, 52 years of age, has a SOFA score of 10, and no severe comorbid conditions. Patient A receives 3 points and Patient B receives 2 points. Patient B is prioritized via the framework.
2. Patient A, 20 years of age, has a SOFA score of 7. Patient B, 39 years of age, has a SOFA score of 8. Neither has severe comorbid conditions. Both receive a score of 1. Looking to life-cycle considerations, they each receive 1 point, and cannot be distinguished using the framework. The scarce resource should be allocated based on chance in a fair and transparent way, e.g., via lottery.
3. Patient A, 45 years of age, has a SOFA score of 15, and no severe comorbid conditions. Patient B, 74 years of age, has a SOFA score of 7, and has metastatic cancer with death likely within 1 year. Patient A receives 4 points and Patient B also receives 4 points. Looking to life-cycle considerations, Patient A receives 1 point while Patient B receives 3 points. Patient A would be prioritized via the framework.

Triage Team

The purpose of this section is to provide a framework for a functional triage team to be implemented and utilized in the event that demand for critical care resources, in general, and more specifically, mechanical ventilators, outstrips local and regional capabilities. Although ventilators are the most likely resource to require re-allocation in the event of a major biologic disaster, the Triage team may also be asked to triage and allocate other limited resources, such as hemodialysis. The specific resource allocation algorithm/tool to be utilized for this process is outlined above.

Triage Officer:

The triage officer is in charge, assesses all patients, assigns a level of priority for each, and directs attention to the highest-priority patients. The desirable qualities of a triage officer include established clinical expertise, outstanding leadership ability, and effective communication skills. He or she is expected to make decisions that benefit the greatest number of patients given potentially limited resources, even though these decisions may not necessarily be best for any individual patient. To optimize effective functioning in a crisis, the triage officer should ideally be well prepared and trained in advance by means of disaster drills/exercises or simulation testing. Such training should be provided at regular intervals, as time and resources allow.

The triage officer has the ultimate responsibility and authority for making decisions as to which patients will receive the highest priority for receiving critical care, and is empowered to make decisions regarding reallocation of critical care resources. The triage officer will share decisions with the attending clinicians,

who will then inform affected patients and family members. This is consistent with recommendations regarding the function of the triage officer from the trauma literature.⁴

So that the burden is fairly distributed, triage officers will be nominated by the chairs/directors of the all the clinical departments that provide care to critically ill or injured patients. This would include the Departments of Medicine, Surgery, and Anesthesia in all hospitals and the following departments and divisions in the large academic medical centers:

Neuro Critical Care

Pediatric Critical Care

The Chief Medical Officer and the individual responsible for Emergency Management must approve all nominees. A roster of approved triage officers should be maintained that is large enough to ensure that triage officers will be available on short notice at all times, and that they will have sufficient rest periods between shifts.

Triage Team:

In addition to the triage officer, the triage team should consist of an experienced critical care nurse, and another clinician with expertise relevant to the particular scarce resource. In the case of ventilators, this might be either a respiratory therapist or clinical pharmacist, in the case of dialysis this might be a dialysis nurse. In most circumstances, because these clinicians will be in high demand for provision of bedside care, these roles may be filled by managerial personnel (e.g., the director of respiratory therapy) as appropriate. In cases where managerial personnel are not available, hospitals should seek support to fill these roles from outside of their institution, e.g., other hospitals, etc. The role of triage team members is to provide information to the triage officer and to help facilitate and support his/her decision-making process. A representative from hospital administration, appointed by the Incident Commander, will also be a part of the team in order to supervise maintenance of accurate records of triage scores and to serve as a liaison with Incident Command Staff and the Ethics Committee.

The triage officer and team members should function in shifts lasting no longer than 14 hours. Therefore, there must be at least two shifts per day to fully staff the triage function. Triage officers will not work shifts on more than three consecutive days, unless specifically authorized to do so.

At least one nonclinical (secretarial or administrative) person for data-gathering activities, documentation, and record keeping will support the triage team. That person must be provided with appropriate computer and IT support to maintain updated databases of patient priority levels and scarce resource usage (total numbers, location, and type). Team decisions and supporting documentation should be reported daily to the Incident Commander.

Triage Mechanism:

The triage officer and his/her team will use the provided allocation algorithm to determine priority scores of all patients receiving the scarce critical care resource at least daily, but not more frequently than every 12 hours. For patients already being supported by the scarce resource this will include an assessment of clinical improvement or worsening.

The triage officer will review the comprehensive list of priority scores for all patients twice daily and will

communicate with the clinical team immediately after a decision is made regarding reallocation of a given resource. A decision to reallocate will be based on evidence that the patient's condition has not sufficiently improved and other patients who are waiting have a better prognosis (lower score)

Triage Oversight in Individual Cases:

As explained in Section 6d below, the State's invocation of mandatory allocation criteria entails both protection from liability and a requirement that fair procedures be followed, within the limits of feasibility in a crisis. The main safeguard against potentially erroneous decision-making is that the ASR framework relies on clinically determinable data and patient age; there are no vaguely worded grants of discretion to argue about.

In considering the feasibility of a process for real-time review of the triage officer's decisions, we differentiate between the decision to allocate a scarce resource among individuals, none of whom are currently using the resource, and the decision whether to withdraw a scarce resource from a patient for re-allocation to another. In the former situation, triage decisions will necessarily be made very quickly, to maximize the effective use of resources and thus save lives. Whether individual A or individual B receives the only available ventilator, for example, will be decided by quickly calculating the comparative scores under the algorithm. The small possibility that the triage officer miscalculated a score is ameliorated by the check of the triage team. Considering the speed with which the triage decision must be made, in the face of many people waiting to be triaged, an appeal process is unworkable.

As discussed in Section 3 above, withdrawing a scarce resource like a ventilator from a patient for reallocation is "to be approached with caution, given that many people view this practice as morally ambiguous." With such caution in mind, we consider a limited appeals process in withdrawal cases to be both feasible and prudent. The following are the key elements of this process:

- (1) The patient (or a health care agent or surrogate decision maker, if the patient lacks decision-making capacity) and the patient's attending physician will be informed of a decision to withdraw the scarce resource prior to any action being taken.
- (2) Any of these individuals may appeal a triage officer's decision. The appeal must be immediate (within the context of the clinical realities at the time), allowing some time for brief consultation among the patient, family and physician.
- (3) The appeal is to be brought immediately to a Triage Review Committee or a designated subcommittee that is independent of the triage team. The individuals appealing the decision must state the grounds for the appeal and the triage team must provide the grounds for the triage decision. An appeal may not be brought based on the argument that the ASR framework itself is defective in some way or that an exception outside the framework should be made for this patient.
- (4) The appeals process must occur quickly enough that erroneous triage decisions do not harm the patient and correct decisions intended to benefit another patient are not unduly delayed.
- (5) The decision of the Triage Review Committee or subcommittee for a given hospital will be final and not subject to further appeal.
- (6) Periodically, the Triage Review Committee should retrospectively assess whether the review process is consistent with effective, fair, and timely application of the ASR framework and report its assessment to the Central Triage Committee discussed below.

The Triage Review Committee will be made up of no fewer than five individuals including each of the following or their designee:

1. Chief Medical Officer
2. Chief Nursing Officer
3. Legal Counsel
4. Risk Management
5. Chair of the Ethics Committee
6. One designated off-duty triage officer

Three committee members are needed for a quorum to render a decision.

Retrospective Review and Potential Modification:

Consistent with the recommendations of the Task Force for Mass Critical Care, the accumulated data of all hospital triage decisions will be subject to review by a Central Triage Committee for the State of Maryland.⁴ This committee will not review any appeal determinations by the hospital Triage Review Committee as those decisions will be final and not subject to further appeal. The purpose of the Central Triage Committee is to review triage decision-making on a state-wide level, maintain situational awareness and perform research and modify allocation algorithms as needed.

This committee will consist of members appointed by the Governor on the advice of the Secretary of Health including the following (all of whom must work in Maryland):

- The Secretary of MDH or a designee
- MEMA representative
- A county public health officer
- An epidemiologist
- Maryland Hospital Association
- Three of the following physicians:
 - An Internal Medicine Critical Care/Pulmonary physician
 - An Anesthesia Critical Care physician
 - A Surgical Critical Care physician
 - A pediatric Critical Care physician
 - An Emergency Medicine physician
- A senior critical care nurse
- A social worker
- An ethicist
- A triage officer representative

Note: The Secretary of MDH and/or NDH will determine which other agencies should be part of the Central Triage Committee.

As noted above, the function of the committee is to: (1) maintain situational awareness of supply and demand for critical resources utilized in the state; (2) monitor triage outcomes; and (3) perform research and modify triage protocols if needed. (Figure 1).⁴ The Central Triage Committee will retrospectively

review all data supplied by the hospital Triage Review Committees and triage teams concerning decision-making and outcomes.

The Central Triage Committee will maintain a bidirectional communication network with the local hospital Triage Review Committees in order to maintain situational awareness and relay information regarding triage modifications. The committee will serve to ensure quality control and appropriate application of the mandatory triage algorithm and equitable implementation. If the Central Triage Committee determines, based on the review of decision-making data and research, that the current guidelines must be modified, it may do so. Changes to the guidelines may only be made to further the ethical goal of maximizing patient survival and on the bases of objective data and research. Once a modification is made, the Committee shall send the modified algorithm to each hospital Triage Review Committee. In turn, these committees will relay the modified triage algorithm to their individual triage teams and officers. Any approved modification of the algorithm will be mandatory.

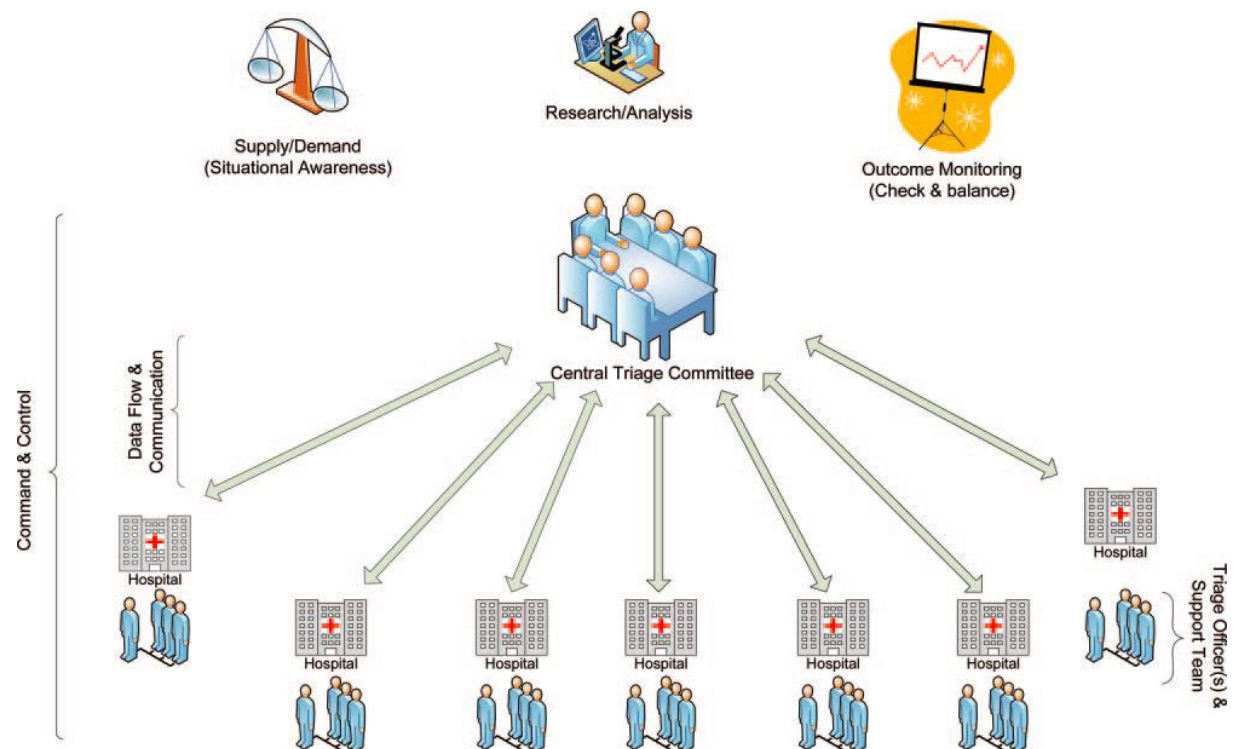


Figure 1. Triage infrastructure: the optimal relationship between the state/regional central triage committee and the Triage officer(s) at individual hospitals.

Devereaux AV, Dichter JR and Christian MD et al. Definitive Care for the Critically Ill During a Disaster: A Framework for Allocation of Scarce Resources in Mass Critical Care From a Task Force for Mass Critical Care Summit Meeting. January 26-27, 2007, Chicago, IL. *Chest* 2008;133(5):57S-66S.

Legal and Liability Issues

In the allocation of scarce resources, law plays a secondary role compared to issues of public health, clinical care, and ethics. Nevertheless, the legal framework can be a facilitator of, or a barrier to, both nuanced planning for a health emergency and the implementation of plans when the event occurs. This section briefly explains why the legal framework in Maryland is sound. Current law gives State officials

the necessary latitude to develop effective, ethical plans and reassures health care providers that they will be legally protected in carrying out these plans.

Scope of the Governor's and Health Secretary's emergency powers

Maryland law grants the Governor authority to deal with emergencies of various kinds. The statute that explicitly addresses the allocation of scarce resources, however, is one aimed at empowering the Governor to manage a “catastrophic health emergency.”¹⁸ This is “a situation in which extensive loss of life or serious disability is threatened imminently because of exposure to a deadly agent.”¹⁹ A “deadly agent” is any biological agent capable of causing extensive loss of life or serious disability,” including the viruses that cause pandemic influenza.²⁰

The law identifies how the Governor determines and announces that a catastrophic health emergency has occurred: through a proclamation, which must indicate the nature and cause of the emergency and the areas threatened or affected.²¹ Before exercising the extraordinary powers commensurate with a catastrophic health emergency, the Governor is accountable for identifying the “deadly agent” and explaining why there is an imminent threat of extensive loss of life or serious disability.²²

Once a catastrophic health emergency has been proclaimed, the Governor may issue a broad range of “orders” to respond to the situation.²³ The Health Secretary has complementary authority to plan for, and coordinate the response to, a catastrophic health emergency. The Secretary is to “publish protocols to assist health care practitioners in developing plans to respond to a catastrophic health emergency” and, if the Secretary considers it necessary, may “require health care practitioners to implement [these] plans.”²⁴ Given the definition of a catastrophic health emergency, the evident purpose of these grants of power is to reduce the loss of life or serious disability that would otherwise occur.

Among many other possible actions, the Governor may order the Health Secretary or other official to control access to “anything needed to respond to the medical consequences of the catastrophic health emergency.” This breadth is accompanied by specificity: The Governor may order “rationing.”²⁵ Given both the plain language of this provision and its purpose, the Attorney General concluded that the Governor may order the Health Secretary to fashion criteria for allocating access to ventilators when demand exceeds supply.²⁶ Although the request to the Attorney General focused on ventilators, this should be understood as an archetypal example; the Attorney General’s reasoning applies not only to ventilators but also to any other resource that must be rationed to minimize morbidity and mortality during the catastrophic health emergency.

The statutory authority to ration life-sustaining equipment like ventilators presents a discomfiting issue addressed by the Attorney General: May the criteria for rationing lawfully include the reallocation of a ventilator from a patient currently on a ventilator to another seriously ill individual who awaits a ventilator? This would sometimes occur under the ASR framework presented in this report. The Attorney General rightly pointed out the consequences if the law were interpreted to prevent reallocation:

[The] primary purpose of the Catastrophic Health Emergencies Act is to help save lives, and granting the Governor the authority to set allocation guidelines for the initial provision of ventilators while prohibiting their withdrawal and reallocation would not fully effectuate that purpose. Such a plan would bind health care providers to a state of affairs where patients with hopeful prognoses are dying while those unlikely to survive even with ventilator treatment exhaust all of the available resources.²⁷

The Attorney General concluded that “the current statute grants the Governor authority to set allocation criteria both for access to, and withdrawal from, ventilators during a flu pandemic.”

Mandatory versus discretionary ASR criteria

The core of this report describes allocation principles and delineates an algorithm aimed at achieving in practice the public health goals that underlie the catastrophic health emergency law. Because these goals are the same everywhere in Maryland, the report envisions that the Governor’s proclamation and implementing directives of the Health Secretary – in particular, the allocation algorithm -- be mandatory. That is, health care providers would be required to allocate scarce resources pursuant to the specified criteria and procedures, to avoid the potential injustice, confusion, and harm of hospital-to-hospital variation.²⁸

As the Attorney General pointed out in his opinion, mandating compliance in effect turns clinicians at private hospitals into “state actors,” subject to constitutional due process requirements that would normally apply only to government officials and employees.²⁹ To avoid claims that constitutional rights were infringed, the circumstances under which a ventilator or other life-sustaining treatment is withdrawn from a patient must be narrowly drawn, and triage procedures must satisfy due process.

Due process considerations

In ordinary circumstances, a patient who has consented to the use of a ventilator continues to receive that treatment until the treatment is no longer clinically indicated. Against this background, the Attorney General thought it “possible, but by no means certain,” that individuals might be deemed to have a fundamental right “not to be withdrawn from potentially life-saving treatment without consent.”³⁰

However, that such a right might be recognized does not negate the State’s power to minimize morbidity and mortality during a catastrophic health emergency. This aspect of due process instead requires reallocation criteria designed so that, in the Attorney General’s words, “patients are only removed from a ventilator if their condition has not sufficiently improved and other patients who are waiting have a significantly better prognosis.”³¹ That is precisely the import of the criteria discussed in Section V of this report. In addition, the United States Supreme Court has previously recognized that personal freedom may sometimes be restrained by the state in the interest of public health:

[I]n every well-ordered society charged with the duty of conserving the safety of its members the rights of the individual in respect of his liberty may at times, under the pressure of great danger, be subjected to such restraints, to be enforced by reasonable regulations, as the safety of the general public may demand.³²

The Attorney General advised that procedural due process requirements would be satisfied if the reallocation process contained the following four elements: (1) clear, objective rationing criteria; (2) application of the criteria by an independent Triage officer, not the patient’s attending physician; (3) notice to a patient (or, more likely, the patient’s surrogate) of how rationing criteria were being applied in the particular case; and (4) if feasible, a “rapid review” appeal process, using an appeals decision maker not part of the Triage team.³³ All of these are included in the ASR framework presented in this report.

Immunity from liability

Commentators have underscored the importance of robust legal protection for health care providers called upon to implement rationing of scarce resources. One article, for example, noted that, even in

conditions of scarcity, providers would face potential civil and criminal liability were they to withdraw care against the wishes of a patient or surrogate.³⁴

Recognizing that assuaging liability fears is essential to an effective response to a catastrophic health emergency, the Maryland General Assembly provided a broad grant of immunity: “A health care provider is immune from civil or criminal liability if the health care provider acts in good faith and under a catastrophic health emergency proclamation.”³⁵ As the Attorney General put it, “The purpose of this immunity provision is to ensure that clinicians can comply with the Governor’s orders and act to save lives during a public health emergency without fear of liability.”³⁶

If the State orders the uniform use of this ASR framework, triage officers and others who carry out these orders will be acting “under a catastrophic health emergency proclamation.” Further, they will act “in good faith” when they honestly try to apply the allocation criteria, even if in hindsight they are seen as having made a mistake.³⁷ Immunity is lost “not simply [from] bad judgment or negligence” but only from “bad faith” behavior, actions that imply “a dishonest purpose or some moral obliquity and a conscious doing of wrong.”³⁸ Although in ordinary care withdrawing a ventilator over objection to give it to another might well be considered bad faith or willful misconduct, in a catastrophic health emergency compliance with the Governor’s orders is neither. As the Attorney General unequivocally concluded, “health care providers are immune from civil or criminal liability when withdrawing and reallocating ventilators in accordance with State-adopted allocation criteria during a catastrophic health emergency.”³⁹

Communication Guidance Regarding the Allocation Framework

Introduction

The following advice constitutes guidance on how best to communicate with the public who will bear the full weight of decisions concerning scarce, life-saving medical resources in a disaster. Successful scarce resource allotment in a crisis will require public trust and cooperation, both of which are more likely if the development and implementation of an allocation framework have been transparent and if decision makers exert good crisis leadership as evidenced by empathy, honesty, and candor. Able communication is key to both transparency and leadership.

The recommendations reflect a phased approach, beginning with initial rollout and socialization of the framework among diverse authorities who will execute and explain the framework. The rollout period should be a time to strengthen the communication infrastructure (namely, personnel, cross-sector planning, and protocols) necessary to convey messages to the public before, during, and after the crisis. Each of these phases is considered in turn, emphasizing strategic objectives, action steps, and salient themes raised during the community forums. These themes represent public concerns, questions, and moral uncertainties to which authorities should be especially sensitive.

Informing the guidance are community forum findings, “best practices” literature in crisis communication, and the professional judgment of project team members and expert advisors. The recommendations reflect “first generation” advice; a fully fleshed out communication strategy and advance message testing, for example, would further enable decision makers to communicate meaningfully with diverse publics on this ethically fraught topic. Appendix B provides an overview of the larger universe of communication topic areas raised across the full life cycle of a catastrophic health event, of which the allocation of scarce resources is a central feature.

Forthright, compassionate communication by top political leaders and health authorities can positively influence public conversations about the disaster, the medical response, and resource shortages. Good crisis leaders can help set public expectations well before patients and their families enter into the four walls of a health facility where triage decisions are being made. That is to say, well-informed community conversations can help lay the groundwork for, and potentially ease difficult bedside conversations. For instance, the likelihood of an adversarial appeals process in relation to withdrawing a ventilator may be lessened through a consistent and repetitive message – in press conferences, in media reports, at patient admission, and just prior to a withdrawal decision – that removal of a resource from an unresponsive patient is a tragic, yet necessary step in trying to preserve the most lives at a time when every other resource has been brought to bear and every other option exhausted. Similarly, altruistic individuals may “self-triage” when fully informed about the conditions calling for the allocation framework to be implemented.

1. Pre-Event Communication Capacity Building

The ability of top decision makers and frontline health workers to communicate effectively about an allocation framework with the public before, during, and after a crisis requires that these professionals and their organizations embrace a shared vision and common language. The initial framework rollout and socialization among official stakeholder groups should facilitate joint understanding of the framework as well as mastery of common messages for the public.

a. Strategic Objectives

- Conduct a campaign to raise awareness about the concept of crisis standards of care and the purpose of the framework across different sectors and levels of government.
- Equip individuals in positions of authority with working knowledge of the framework so that they can address concerns that may emerge among the healthcare workforce, patients and their families, and the broader community before and during the crisis, in both preparedness and response initiatives.

b. Action Steps

- Implement an outreach/education campaign among state and local officials, hospital and healthcare system leadership, healthcare providers, and other relevant entities about the framework. Stakeholder groups include:
 - State agencies (e.g. MDH Secretary and Deputy Secretary for Public Health Services, MDH OP&R, Attorney General’s Office, Office of Health Care Quality [Hospital Licensing], State Community/Special Populations, MEMA, MIEMSS);
 - Local jurisdictions (e.g. emergency management agencies, health departments);
 - Private sector (e.g. hospital, professional medical organizations, spiritual leaders).
- Support on-going conversations among stakeholders about the framework’s origins, principles, preparedness initiatives, data collection, decision-making processes, training/education, triggers, implementation plans, retroactive reviews, and appeals.
- Incorporate communication experts alongside key decision makers at the outset of the framework’s rollout to develop a communication strategy and to devise standardized, essential information and scripts that will enable delivery of a common message to healthcare practitioners, the broad public, and the media about the framework.
- Enroll officials who will be speaking publicly about the framework in Crisis and Emergency Risk Communication (CERC) training offered by the CDC.

c. Thematic Priorities

- Standardized implementation: Generate a common view of the framework so that it is consistently applied across the state – a priority for community forum participants.
- Unique issues by jurisdiction: Identify those concerns that may only appear locally so that they are appropriately addressed and shared with the public

2. Pre-Crisis Communication

Conversations in advance of the crisis regarding the framework's purpose, origins, and implementation plans will enhance public confidence in the framework and elicit greater cooperation during the crisis.

a. Strategic Objectives

- Raise ethically complex issues among the populace in advance of the crisis so that there is no element of surprise when the need to implement the framework emerges, and so that there is buy in and support during the crisis.

b. Action Steps

- Capture people's attention about the framework. Eliciting interest in the topic outside of a crisis and making the problem concrete will be early communication challenges. Discuss how other places in addition to Maryland have done something or will be doing something similar.
- Support on-going conversations about the framework's origins, principles, and implementation plans with existing community advisory bodies at the state, local, health system, and hospital level. Engage and elicit the input of these opinion leaders in advance; they can serve as trusted spokespersons in their respective communities during the crisis.
- Reach out to the media to educate them on the framework's rationale, development process, and protocols for implementation and evaluation. Be prepared to discuss the concept of standards of care, ethical principles, and the withhold/reallocate distinction.
- Meet the communication needs of racial and ethnic communities. Think about key gatekeepers to these groups, as well as the broadcast and print media that serve them.

c. Thematic Priorities

- Origins: Share details on how the framework was developed and with whose input; spotlight the efforts to incorporate public input into the process, from across the state.
- Withholding vs. withdrawing: Prepare people for the possibility that the allocation of scarce resources may require withdrawing a scarce life-saving resource (e.g., ventilator) from one person to give to another – a scenario that caused great unease among community forum participants.
- Decision-makers: Explain who will be making decisions and the protocols that they will be following, such that bias will play no role.
- Ethical principles: Come prepared to define and illustrate using concrete examples, the ethical principles governing the framework.

3. Crisis Communication

During the crisis, people will be witnessing the tragedy of the event, in addition to the moral and practical challenges inherent in the emergency response. They will be hungry for information on both matters and will expect officials to be straightforward and honest with them.

a. Strategic Objectives

- Gain and maintain public trust and understanding through transparency about the planning, triggers, and process of implementation in addition to the outcomes of the framework.

b. Action Steps

- Be forthcoming about the triggers for implementing the framework – explain what conditions have necessitated the framework’s application and how alternative measures have been fully exhausted. Be prepared to answer questions about resource limitations (e.g., too few ventilators; inadequate staff, space, and other essential equipment/supplies), knowing that the public may wish a technological “fix” to what is ultimately a moral dilemma.
- Hold frequent and regular press conferences to discuss how the implementation and situational awareness are proceeding. Communicate with honesty, candor, and openness. Be truthful to foster credibility with the public and the media. If there are challenges with implementation, then acknowledge them and outline your plans to address them.
- Be ready to share situational awareness about conditions affecting resources (i.e., space, staff, stuff) across jurisdictions and throughout the state. Come prepared to answer concerns about how the framework is being implemented in an evenhanded manner, with concrete evidence to back up that assertion (this assumes prior training and planning to assure fairness in applying the framework). When there are problems, then lay out the plan to remediate them. Strive for coordinated communication on this potentially controversial issue.
- Communicate with compassion, concern, and empathy. Recognize the human dimensions of the crisis, acknowledge people’s distress at both the disaster/epidemic and any limits to the official response, and extend genuine sympathy and understanding.
- Monitor public reactions using diverse means by jurisdiction and across the state (e.g., social media, dialogue with community leaders, local and state hotlines) in order to correct misinformation, dispel rumors, and gather input regarding implementation challenges.

c. Thematic Priorities

- Change/Uncertainty: Alert the public to the fact that the crisis is evolving. Underscore that we have done a lot to prepare and that we will learn along the way.
- Emotional burden: Acknowledge the moral angst and ambiguity inherent in any allocation process, and ask the community to bear the difficulty and burden along with you.
- Fairness: Be prepared for questions regarding whether the process is free, to the best knowledge of your knowledge, of biased practitioner decisions, discriminatory behavior, and/or people “gaming” the system. Fair, equitable access is a top priority for the public.
- Passing along resource to a loved one: Be prepared to explain why someone can’t pass along a resource to a loved one, affirming the desire to make this personal sacrifice.

- Withholding vs. withdrawing: Prepare people for the possibility that the allocation of scarce resources may require withdrawing a scarce life-saving resources (e.g., ventilator) from one person to give to another – a scenario that caused great unease among community forum participants. Inform them of what appeal and retrospective review processes will be available.
- Initial stabilization of patient versus allocation of resource: Be prepared to clarify that first responders and bedside clinicians may take steps to stabilize a patient at the outset, as they would normally, and that this temporary measure is intended to provide time for an informed decision about next steps, including potential access to a scarce life-saving resource. Such stabilization efforts, however, do not mean that a scarce resource is necessarily forthcoming.
- Compassionate care: Explain what steps are being taken to provide succor to individuals who are unable to receive the medical resource in scarce supply that they need.

4. Post-Crisis Communication

After the crisis, people will be in a state of reflection, trying to make sense of what has happened. They will rely upon images and narratives around them to help explain what has been experienced in connection with the calamity, and to provide meaning to processes of grieving and recovering. Themes of causality, responsibility, and the in/adequacy of the response can color the post-crisis period, as can potential anger and further distrust of authorities.

a. Strategic Objectives

- Communicate in ways that prompt the process of recovery, that is, acknowledge grief, confer meaning on the tragedy, stress the community’s resiliency, and outline steps to mitigate conditions of scarcity, if possible, and to improve allocation processes in the future.

b. Action Steps

- Acknowledge the pain and grieving associated with the crisis and the scarcity of life saving resources; also offer a narrative that emphasizes capability, collective learning, resiliency, and a focus on the future to help ease the experience of distress.
- Publicly share what authorities have learned from implementation of the framework, including successes and missteps. Prepare an abridged after action report by each sector, each jurisdiction, and state agencies. Communicate how authorities, jurisdictions, hospital sector, and professional organizations plan to address concerns on the basis of that information and how future emergency responses will be improved.
- Review what went well and what aspects of the plan were effective, focusing on topics of concern for the public, including: saving more lives through applying the framework (vs. having no framework on which to rely), evenly applying the framework across the state, ensuring equitable access to the scarce resource, and providing effective palliative care for those who were lost. Spotlight the value of advance planning and preparedness and the creative solutions that emerged in crisis in relation to these topics.
- Conduct an “after action” analysis of the communications transpiring before and after activation of the framework, in connection with the larger debriefing and analysis of

preparedness, response and recovery efforts. Assess how spokespersons performed, identify unforeseen topics of priority for the public, and evaluate where there were any key audiences who were not adequately engaged. Investigate if and how ongoing communications contributed to public support and acceptance of difficult choices.

- Plan for ways to incorporate public input into after action assessments of the framework’s implementation. Consider a series of local or regional meetings to assess public reactions; continue monitoring social media. Experience with past emergencies indicates that affected communities are heartened by learning what agencies accomplished during the response and how public voices helped to shape change. Share all lessons learned in multiple channels.

c. *Thematic Priorities*

- Resilience and collective learning: Spotlight how the entire community met the crisis with courage and how planning for future events will incorporate lessons learned from the tragedy.

Conclusion

All would hope that this framework will never be needed, either because we are lucky enough never to experience such a severe disaster or because our preparedness and response efforts keep a disaster from becoming a catastrophe. However, if a catastrophic shortage of life-sustaining medical resources cannot be averted, we have provided here an allocation scheme that is informed by the values of the people of Maryland and is consistent with the general consensus of experts. This must be a living document as medical technologies will evolve and new research may improve our ability to determine prognosis in critically ill or injured patients.

Appendices

Appendix A: Region III Health & Medical Coalition specific strategies to avert the need to implement the framework¹

This section of our framework will describe how to delay the declaration to implement the framework to allocate scarce medical resources (ASMR). These key operational strategies and tactics will include the expansion of acute and critical care services in hospitals and ESF-8 partners that normally provide patient care for mass casualty incidents (MCI), including pandemic influenza or major infectious disease outbreaks.

These recommendations are important to guide direct and indirect care givers, public health partners, incident command team members, hospital executives, and government officials in caring for MCI patients.

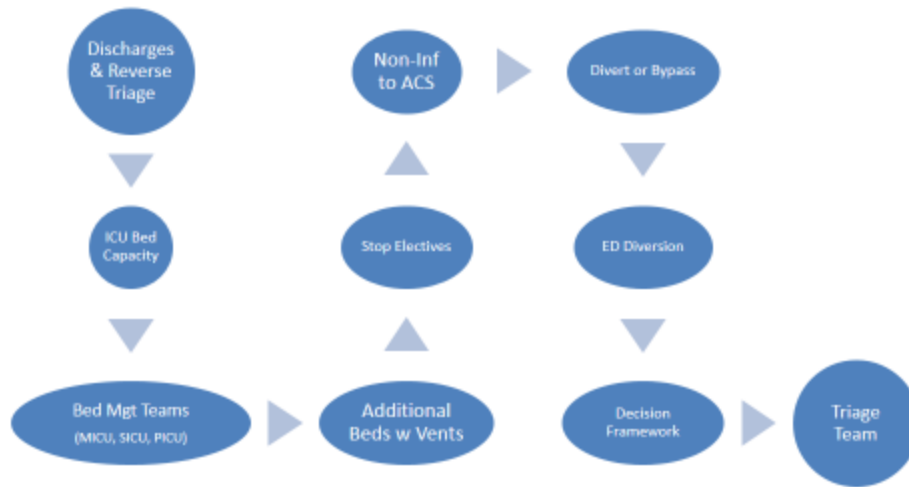
Successful management of MCI requires planning to develop, coordinate and implement pre-established processes, plans, and procedures in an efficient and effective manner to minimize loss of life, maintain control, and delay the declaration and implementation of a decision framework to allocate scarce medical resources (ASMR).¹ Surge capacity and capabilities (e.g., space, staff, and stuff) are limited. Therefore, if an extensive MCI occurs, these resources will be inadequate to meet the clinical demands.²

System level planning involves collaboration between public and private partnerships (i.e., health care coalition emergency planners (e.g., agencies, individual hospitals, health systems), in conjunction with individual organizations, subject matter experts (i.e., intensivists, critical care nurses, ICU assigned staff (e.g., respiratory therapists, pharmacists, etc.), direct care providers, ethicists, legal counsel, etc.) that are responsible for coordinating and enabling surge, patient care and infrastructure.³ Once each organization within a region has completed its draft plan, they should then share with other regions to identify best practices or minimum standards across the state to strive for efficient coordination and, when indicated, for diversion and mutual aid. In addition, involving the Maryland Hospital Association may also achieve consensus in a timelier manner for all hospitals in the state.

The activation of the declaration to this crisis situation is a response to all space, staff, and stuff are all used up or nearly used up throughout the state's hospitals, healthcare organizations, and ESF-8 partners. Therefore, this planning requires the developing the following concepts/processes and procedures for space, stuff and staff in a sequential and coordinated manner at each hospital, other healthcare organizations, and ESF-8 partners at a local, regional, and state-wide perspective. By understanding the various levels of resources/capabilities available of each resource at each organization will allow the public and private sector incident command centers to plan accordingly to maximize these surge resources before implement the decision framework to ASMR to save the most lives.

In order to use all of the available space, staff, and stuff, please refer to the flow diagram. In addition, the succeeding pages will describe each of these aforementioned resources.

Resources to Delay the Activation of an ASR Framework at Each Hospital



On January 30, 2017, the Region III Health and Medical Coalition completed a draft of a guidance document “Medical Surge and Crisis Standards of Care⁶.” Some of this guidance document is described below for its hospital members as well as the Coalition to develop an implementation plan.

I. Crisis Standards of Care Framework

Cornerstones for the Basic Framework

The two cornerstones for the foundation of this framework are the ethical considerations that govern planning and implementation and the legal authority and legal environment within which plans are developed.

- A. Ethical decision-making is of paramount importance in the planning for and response to disasters. Without it, the system fails to meet the needs of the community and ceases to be fair, just, and equitable.
- B. The legal authority and legal environment support the necessary and appropriate actions in response to a disaster. Good governance encompasses the functions of monitoring and evaluation, as well as accountability and meaningful contributions to policy development.
- C. The steps between these two cornerstones include provider and *community engagement* efforts to develop , development of a process that permits individual communities to identify regionally coordinated and consistent *indicators* that denote a change in the usual manner of health care delivery during a disaster and the *triggers* that must be activated in order to implement CSC.
- D. Finally, the steps lead to the *implementation of clinical processes and operations* that support the disaster response. All of these efforts are supported and sustained by an ongoing *performance improvement* process, an important element of any systems approach to monitor demand (ensuring situational awareness), evaluate the impact of implementation actions, and establish/share best practices. Applying the National Incident Management System/National Response Framework principles and systems can help improve coordination and ensure the desired outcomes.

II. Four Key Elements for CSC Protocol Development

A. Ethical Considerations

Health care professionals must adhere to ethical norms even in conditions of overwhelming scarcity that limit practitioner and patient choices. As a starting point for CSC planning deliberations, ethical values should include the concept of fairness, together with professional duties to care for patients and steward resources. The CSC development process should be guided by key ethical values, including transparency, consistency, proportionality, and accountability.

B. Community and Provider Engagement, Education, and Communication

Meaningful, integrated, and ongoing engagement of CSC stakeholders (e.g., the public, at-risk populations, health care providers) is critical for effective CSC planning and implementation. State and local governments involved in CSC planning should ensure that strong public engagement occurs and that it promotes trust and transparency in the process, delineates roles and responsibilities, and gives particular attention to the needs of at-risk populations and those with special medical needs. Active engagement should contribute, as appropriate, to developing and refining CSC protocols, developing communication and educational messages/tools for the public and health care practitioners, developing and implementing strategies for community resilience, and improving future CSC responses.

C. Indicators and Triggers

For the assessment and potential management of CSC incidents, CSC planning efforts should include identifying specific indicators, including those based on situational awareness (e.g., hospital bed availability, ventilator availability, EMS call volume, divert status) and on factors specific to the incident (e.g., incidence and severity of illness or injury; disruption of social and community functioning; availability of resources, such as vaccines and oxygen). Planning efforts should also include establishing triggers for action (e.g., disruption of critical infrastructure, failure of surge capacity strategies).

D. Clinical Process and Operations

CSC plans should acknowledge the continuum of clinical capacity (i.e., conventional, contingency, crisis) during a disaster and should also establish local, regional, and state government clinical processes and operations—including the state disaster medical advisory committee, regional disaster medical advisory committees, and local clinical care committees and Triage teams—that implement incident command system principles, resource-sparing strategies, and communication strategies. In addition, CSC plans should ensure that intra- and interstate plans for CSC implementation are consistent, but not necessarily identical; that resource management is coordinated; that specific attention is given to protecting the interests of at-risk populations and those with special medical needs; and that coordination occurs across all levels and elements of the health care system (e.g., EMS, public health, primary care, home care, long-term care).

The following charts are used courtesy of the Institute of Medicine 2009 document entitled, Crisis Standards of Care: A Systems Framework for Catastrophic Disaster Response, which presents the above key elements in a table format.

Five Key Elements of Crisis Standards of Care Protocols and Associated Components from the 2009 Letter Report

Key Elements of Crisis Standards of Care Protocols	Components
Ethical considerations	<ul style="list-style-type: none"> • Fairness • Duty to care • Duty to steward resources • Transparency • Consistency • Proportionality • Accountability
Community and provider engagement, education, and communication	<ul style="list-style-type: none"> • Community stakeholder identification with delineation of roles and involvement with attention to vulnerable populations • Community trust and assurance of fairness and transparency in processes developed • Community cultural values and boundaries • Continuum of community education and trust building • Crisis risk communication strategies and situational awareness • Continuum of resilience building and mental health triage • Palliative care education for stakeholders
Legal authority and environment	<ul style="list-style-type: none"> • Medical and legal standards of care • Scope of practice for health care professionals • Mutual-aid agreements to facilitate resource allocation • Federal, state, and local declarations of <ul style="list-style-type: none"> ◦ Emergency ◦ Disaster ◦ Public health emergency • Special emergency protections (e.g., PREP Act, Section 1135 waivers of sanctions under EMTALA and HIPAA Privacy Rule) • Licensing and credentialing • Medical malpractice • Liability risks (civil, criminal, Constitutional) • Statutory, regulatory, and common-law liability protections
Indicators and triggers	<p>Indicators for assessment and potential management</p> <ul style="list-style-type: none"> • Situational awareness (local/regional, state, national) • Incident specific <ul style="list-style-type: none"> ◦ Illness and injury—incidence and severity ◦ Disruption of social and community functioning ◦ Resource availability <p>Triggers for action</p> <ul style="list-style-type: none"> • Critical infrastructure disruption • Failure of “contingency” surge capacity (resource-sparing strategies overwhelmed) <ul style="list-style-type: none"> ◦ Human resource/staffing availability ◦ Material resource availability ◦ Patient care space availability

Key Elements of Crisis Standards of Care Protocols	Components
Clinical process and operations	<p>Local/regional and state government processes to include</p> <ul style="list-style-type: none"> • State-level “disaster medical advisory committee” and local “clinical care committees” and “triage teams” • Resource-sparing strategies • Incident management (NIMS/HICS) principles • Intrastate and interstate regional consistencies in the application of crisis standards of care • Coordination of resource management • Specific attention to vulnerable populations and those with medical special needs • Communications strategies of the health system, including public health, emergency medical services, long-term care, primary care, and home care <p>Clinical operations based on crisis surge response plan:</p> <ul style="list-style-type: none"> • Decision support tool to triage life-sustaining interventions • Palliative care principles • Mental health needs and promotion of resilience

NOTE: EMTALA = Emergency Medical Treatment and Active Labor Act; HICS = hospital incident command system; HIPAA = Health Insurance Portability and Accountability Act; NIMS = National Incident Management System; PREP = Public Readiness and Emergency Preparedness.
SOURCE: IOM, 2009, pp. 21-23.

Source: Institute of Medicine, 2009 Crisis Standards of Care, Volume 1 pp. 19-20.

III. Medical Surge and Crisis Standards of Care Process Flow

The Medical Surge and CSC Process Flow (CSC Process Flow) provides a framework for coordination among various entities in a mass casualty incident (e.g., pandemic influenza, emerging infectious disease outbreaks) or other types of catastrophic incidents affecting hospitals within Region III and other Maryland regional coalitions. This response flow process compliments existing emergency procedures, mutual aid agreements, and medical surge capacity targets.

A. To develop an all-inclusive and extensive Crisis Standards of Care workflow diagram the Crisis Standards of Care indicators and triggers must be established using the following tactics:

- Develop situational awareness
- Assess the situation relative to the available resources
- Advise on strategies
- Anticipate any resource deficits (recommend obtaining necessary supplies, staffing, etc.)
- Implement adaptive strategies (conservation, substitution, adaptation, and reuse)
- Allocate/reallocate resources based on deliberate triage decisions.
- Analyze at regular intervals as part of the disaster response planning cycle.

**Overall, the triggers will indicate a point of crisis standards of care which the surge capacity and/or capabilities require a transition from conventional to contingency to crisis response level. Once the crisis response level has been reached, implementation of the decision framework to allocate scarce medical resources would begin.*

B. Key Questions

Several questions that need to be addressed at the Crisis Standards of Care Level are:

- What information is available and accessible?
- How would the information drive the actions?
- What are the challenges to address?
- What actions would be taken?
- What other options exist?
- Do the identified indicators, triggers and actions follow appropriate activation of crisis standards of care?
- What legal issues should be considered?

C. The CSC Flow Process

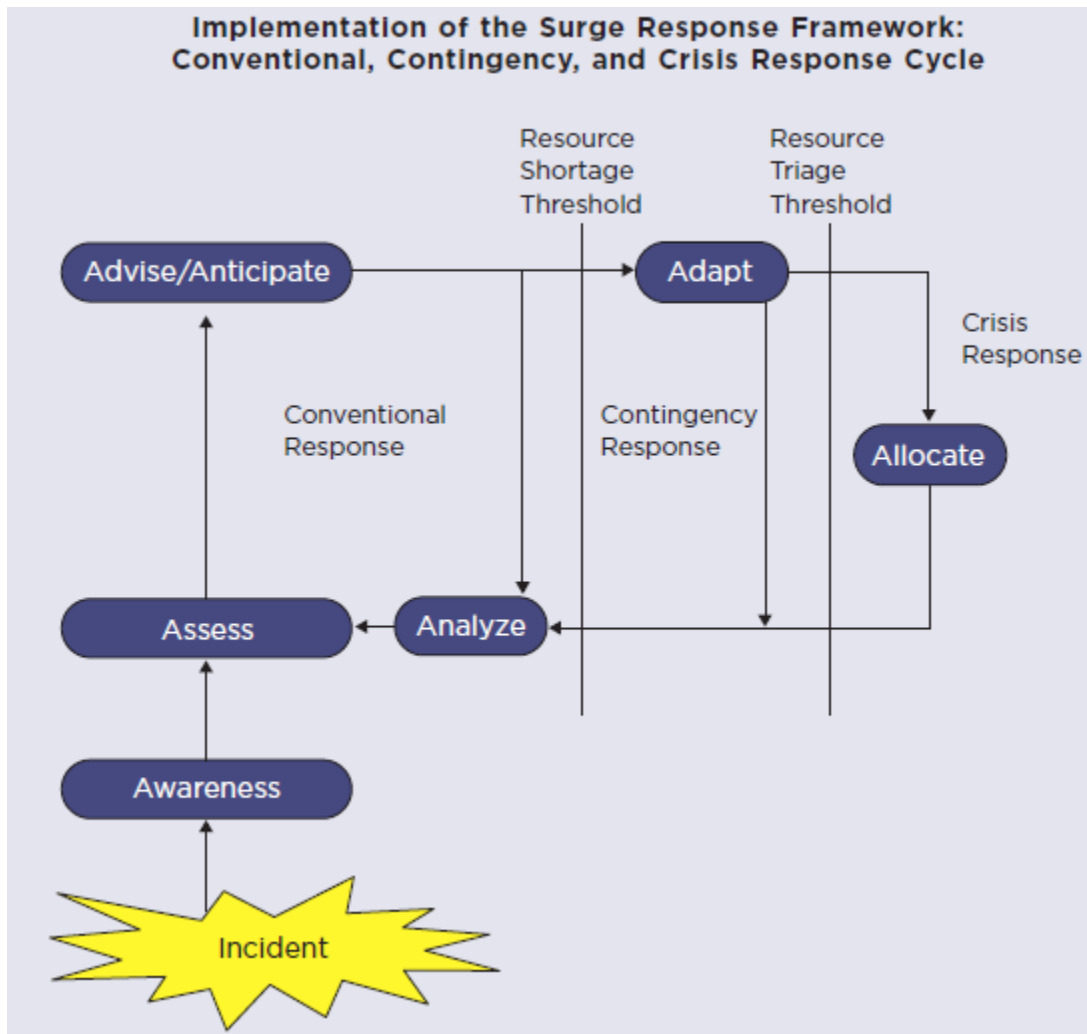
Provides a framework through three levels of crisis standards of care from which, healthcare agencies can develop action plans:

- **Conventional Standards of Care:** A healthcare facility may activate their emergency operations and business continuity plans and operate under Conventional Standards of Care, when they utilize the space, staff and supplies¹ as they do on a daily basis.
- **Contingency Standards of Care:** A healthcare facility activates Contingency Standards of Care if they are using their spaces, staff and supplies in a way that is not consistent with daily practices, but the facility is able to provide care that is functionally equivalent to usual patient care (plus a small to moderate influx of casualties).
- **Crisis Standards of Care:** Under CSC, healthcare facilities respond to a catastrophic disaster (e.g., major mass casualty event or large influx of casualties), while providing the best possible care to patients given the circumstances and resources available. Facilities may adapt spaces, staff, and supplies to provide sufficiency of care. Crisis capacity activation constitutes a significant adjustment to standards of care.²

¹ Space refers to acute care, intensive care unit, etc., and supplies refer to stockpiled ventilators, personal protective equipment, etc.

² Institute of Medicine of the National Academies. Crisis Standards of Care: A Systems Framework for Catastrophic Disaster Response – Introductions and CSC Framework (2012). 1-40.

D. Surge Response Framework



Source: Institute of Medicine, 2009 Crisis Standards of Care, Volume 1 p. 48.

1. Awareness

- Incident commander recognizes current or anticipated resource shortfall(s) and assesses impact of current strategies.

2. Assess

- Technical experts are assigned to specific questions or areas of expertise.
- Clinical care committee performs assessment for more complex situations or when allocation of critical care resources is required during an ongoing incident.
- Logistics and liaison officers coordinate (across agencies) with suppliers, area public health and health care stakeholders and emergency management as needed to obtain additional resources or assistance.

3. Advise/Anticipate

- Clinical care committee examines available resources, data, decision tools, and predictions of demand and determines possible adaptive actions. This analysis should also include what is happening within the region; the likely time frame for the crisis situation; and future impacts on demand, supplies, and staffing.
- Clinical care committee provides input to the planning section (or incident commander, depending on assignment) as to the specific adaptations necessary to accommodate ongoing demands and any recommended decision tools or policies. The committee also facilitates the transition back to conventional care as soon as possible.
- Public information and liaison officers coordinate with the planning section to ensure that the situation and adaptive strategies are included in risk communications provided to staff, patients, their families, and the community. A mechanism for addressing questions should also be available.

4. Adapt

- Clinical services are augmented or curtailed to allow the institution to focus on saving lives (e.g., subspecialty clinics may be repurposed for outpatient acute care).
- Auxiliary equipment or spaces are utilized, including on-campus or off-campus alternate care sites, to support outpatient or inpatient overflow.
- Administrative changes involve little risk to patients and are usually the first adaptations.
- Changes are made in record-keeping and administrative duties.
- Ancillary personnel are used to provide basic hygiene and feeding services.
- Clinical changes involve escalating risk to patients and providers.
- Significant changes are made in shift lengths or number of patients supervised.
- Changes are made in criteria for evaluation (outpatient) and admission, as well as in criteria for admission to certain units (use of monitored units for critical care, for example).
- Changes are made in therapeutics, such as ventilation techniques and medication administration.

5. Allocate

- After approval of the incident commander, the plan is activated for the next operational period (during which the cycle begins again).
- Allocation policies are circulated (for example, use of medications or blood products).
- Reallocation decisions are made. A Triage team is appointed if required for scarce critical care interventions, consisting of at least two specialists practicing and experienced in the clinical specialty affected (e.g., critical care, infectious disease, nephrology) (this team may be institutional, health system, or regional).
- Triage team utilizes decision tools to determine prognoses and, when a clear difference in prognosis exists, recommends treatment for patients with a predicted better outcome (first-come, first-served applies if there is no difference in prognosis substantial enough to justify reassignment).

- Triage team decisions are communicated to the medical branch director (or designated unit supervisor), who orders appropriate patient movement and actions to implement the team's recommendations.
- Triage team decisions are documented in the medical record, as well as in the team's daily activity log.
- Transition plans are in place to maintain the dignity and comfort of patients (and their families) who should have certain forms of care withdrawn or are receiving only palliative care.

6. Analyze

- Quality assurance is performed for ongoing allocation strategies: Is new information available? Are the policies and procedures appropriate for the situation being followed?
- Situational and resource information is updated, and the current strategies are analyzed, with feedback to the incident commander.

7. Resource Shortage Threshold

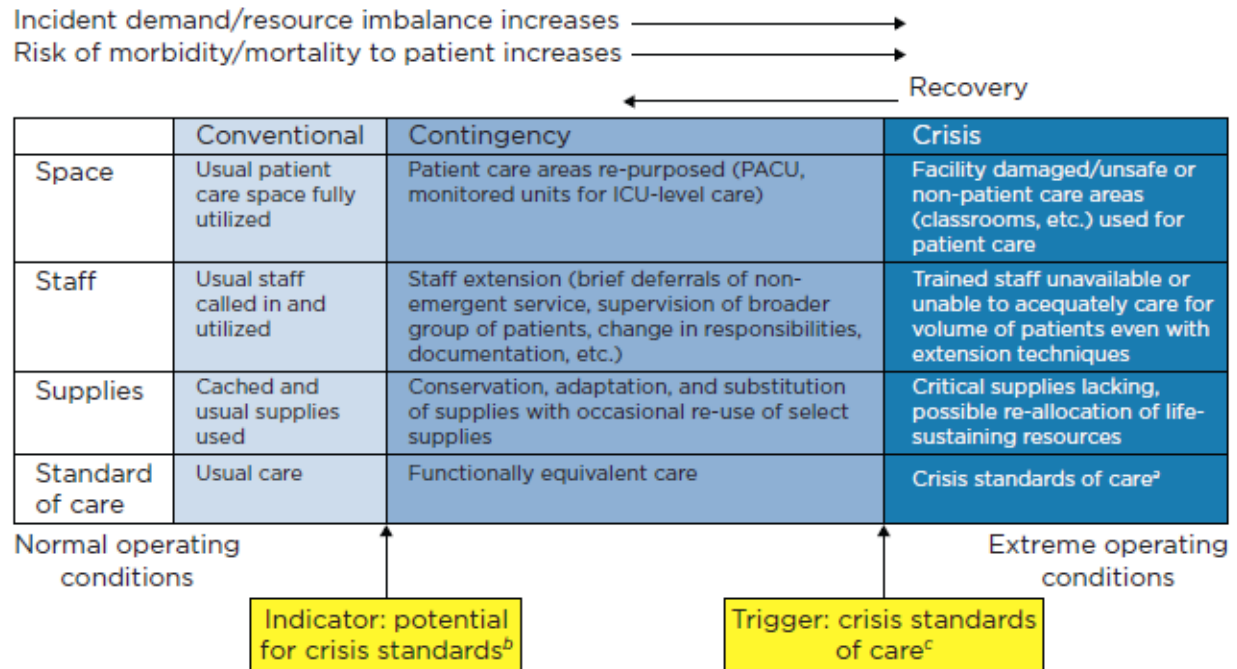
- The resource shortage threshold denotes the "indicators" (described in the committee's letter report) (IOM, 2009) that demonstrate a point at which a potential or actual resource shortfall is recognized; however, substitution or other strategies may suffice to mitigate the problem.

8. Resource Triage Threshold

- The resource triage threshold denotes the "triggers" (described in the committee's letter report) that demonstrate that specific resources are in short supply or are altogether unavailable. Therefore, an allocation schema must be implemented, and access to a specific care resource must be triaged because of demand. The triage decision involves an assessment of need, benefit, and duration of use.

IV. Response Procedures to Implement CSC Process Flow

- A. The following table illustrates general response actions that can be taken at the various levels of care (conventional, contingency and crisis).



Allocation of specific resources along the care capacity continuum.

NOTE: ICU = intensive care unit; PACU = post anesthesia care unit.

^a Unless temporary, requires state empowerment, clinical guidance, and protection for triage decisions and authorization for alternate care sites/techniques. Once situational awareness achieved, triage decisions should be as systematic and integrated into institutional process, review, and documentation as possible.

^b Institutions consider impact on the community of resource use (consider “greatest good” versus individual patient needs—e.g., conserve resources when possible), but patient-centered decision-making is still the focus.

^c Institutions (and providers) must make triage decisions—balancing the availability of resources to others and the individual patient’s needs—shift to community-centered decision-making

Source: Institute of Medicine, 2009 Crisis Standards of Care, Volume 1 p. 41.

B. The table below gives a more detailed picture of actionable items, by hour, of each level of care.

Accommodate incident demands within the time frame shown, progressing from conventional to contingency, then crisis strategies, and returning to conventional as soon as possible.

	Time (hours)	0-2	2-4	4-12	12-24
Major Incident	Conventional Care	<ul style="list-style-type: none"> Fill available staffed beds. Cancel/hold elective surgeries if operative capacity needed or if expected to require admission. Begin "surge discharge": <ul style="list-style-type: none"> Medicine on-call Surgery on-call Unit supervisors Identify patients for "early" discharge, and begin to organize for move. 	<ul style="list-style-type: none"> Provide staff for unstaffed but available beds through unit call-in. Add in-storage beds to usual patient rooms (total X additional possible beds) on the following units, and contact leasing agencies if additional beds required; consider intensive care unit (ICU) bed needs (below): list units and beds here. Move "surge discharge" patients to halls initially to open beds, and then to preidentified discharge holding area; ensure that physicians and nurses attend to the pharmacy, transport, and home care needs of these patients. 	<ul style="list-style-type: none"> Obtain additional beds through leasing or from storage, and add to existing patient rooms; move patients from temporary areas (e.g., postanesthesia care unit [PACU]) to these beds as soon as available. 	<ul style="list-style-type: none"> Cancellation of elective cases begins to have an impact (but does not open new beds).
	Contingency Care (functionally equivalent care—most incidents will require this level of care for a short period of time/adjustment period)	<ul style="list-style-type: none"> Clear patients out of preinduction/phase 1 recovery areas, and fill available beds (total number) in: <ul style="list-style-type: none"> Unit 1 (#) Unit 2 (#) PACU (#) Preinduction (#) Consider area for overflow of minor trauma cases from emergency department vs. overflow from clinics (list locations). 	<ul style="list-style-type: none"> Preinduction and procedural areas fully available. Consider adding GI lab (#), pulmonary/bronchitis lab (#), and (X) areas; Phase 2 recovery areas/preinduction areas (#); and same-day admission/recovery areas (#). Reserve beds in recovery as needed for cases coming out of surgery. Transfer patients from higher-acuity care areas to lower-acuity care areas (e.g., from ICU to monitored floor) to free ICU space (can shift from private to double ICU rooms, but limited in storage/lease bed availability. Bio has (#) contingency monitors). Transfer overflow ICU patients to (list stepdown units in order of preference). 	<ul style="list-style-type: none"> Assess the situation—consider mechanisms for returning to conventional care, and contact regional health care coalition for necessary resources if unable to return to conventional status within following 8-12 hours. 	<ul style="list-style-type: none"> If transfer possible and unable to return to conventional care status within 8-12 hours, initiate local or regional patient transfers.
	Crisis Care (provide best care possible in the circumstances—rare situation)	<ul style="list-style-type: none"> Place patients in hallways or lobby areas (unit name(s)) on cots if floor beds are immediately lacking. Cots stored in: <ul style="list-style-type: none"> Storage location 1 (#) Storage location 2 (#) Evaluate options for patient transfer to reduce demand. 	<ul style="list-style-type: none"> Consider "inpatient" care on rehab/observation units subject to availability/discharges (X beds). Set up preplanned facility areas for austere inpatient care: <ul style="list-style-type: none"> Area 1 (conference rooms or other flat space) Area 2 Area 3 Contact regional hospital coalition—(XXX) XXX-XXXX—on call to advise of situation, and arrange resources/staff or local/interregional patient transfers sufficient to return to contingency care operations and/or activate alternate care sites. Request that units identify patients for possible transfer, and prioritize patients for evacuation based on the situation. Create transfer patient lists for regional/federal use. Request units identify patients for possible transfer and prioritize patients for evacuation based on situation. Create transfer patient lists for regional/federal use. 	<ul style="list-style-type: none"> Mobilize resources for alternate care sites if needed; coordinate with regional hospital coalition. Prepare patient belongings and charting, and begin local/regional patient transfers. 	<ul style="list-style-type: none"> Begin patient transfers to alternate care sites if activated. Federally facilitated (National Disaster Medical System) patient movement (if activated) begins at about 36 hours postincident.
	Evacuation*				

*If no evacuation of patients is possible and the crisis care situation is prolonged, the incident commander should convene the clinical care committee to prioritize resources/service delivery.

Source: Institute of Medicine, 2009 Crisis Standards of Care, Volume 4 pp. 12-13.

V. Operating Under Conditions of Scarce Resources

A. Principles of Crisis Care

Crisis care and triage may be required in the early phase of a no-notice incident, prior to the establishment of situational awareness or incident management. This is termed the reactive phase. Triage decisions are made by bedside providers in this phase, but the goal is to move toward a more proactive, incident-specific, structured, and reproducible decision-making process as rapidly as possible once reasonable situational awareness has been attained and an incident management structure is in place. General prerequisites for making proactive resource triage decisions are as follows (IOM, 2009):

- Critically limited resource(s) and infrastructure are identified.
- Surge capacity is fully employed within health care facilities (and regionally) if capacity/space is the limited resource.
- Maximal efforts to conserve, substitute, adapt, and reuse are insufficient if supplies are the limited resource.
- Regional, state, and federal resources are insufficient or cannot meet demand.
- Patient transfer or resource importation is not possible or will occur too late for bridging therapies (such as bag-valve ventilation or other temporizing measures) to be considered.
- Necessary resources have been requested from local and regional health officials (as applicable).
- A state of emergency has been declared, or other health powers (as applicable) have been activated.

B. The *Region III CSC Process Flow* provides guidance to Region III hospitals in effectively managing the following tools used in a CSC event:

- **Decision Framework to Allocate Scarce Resources:** Allocation of Scarce Resources is the determination of how to equitably and fairly use scarce medical resources available in a contingency or crisis care environment. “Scarce resources” is defined as medical care resources that are likely to be scarce in a crisis care environment. Potential medical care resources that may become scarce during a disaster or emergency include physical items (e.g. medical supplies, drugs, beds, equipment), services (e.g. medical treatments, nursing care), and health care personnel (e.g. physicians, nurses, psychologists, laboratory technicians, EMS providers, and other essential workers).⁵
- **Diversion:** A status for a hospital or healthcare facility during which it does not have the capacity to accept any additional patients and must divert incoming emergency medical services patients to other area hospitals or healthcare facilities.³

³ Institute of Medicine of the National Academies. Crisis Standards of Care: A Systems Framework for Catastrophic Disaster Response – Introductions and CSC Framework (2012). 1-40

- **Mutual Aid:** A voluntary agreement among several hospitals and healthcare facilities for providing assistance to each other during times of mass care incidents and disasters. Mutual aid addresses relationships among included hospitals and healthcare facilities, which is intended to augment, not replace each facility's emergency operations/disaster plan.⁴
- **Reverse Triage:** A process to rapidly create inpatient surge capacity by identifying hospital inpatients who do not require major medical assistance or services for at least 96 hours and who only have a small risk of serious complications resulting for early discharge. In addition, patients who can received medical services with support from home care staff could also qualify for early discharge.
- **Scarce Resources:** A significant shortage of resources, on a national scale, where the availability of supplementary support (through state, federal, or mutual aid agreement) is much less certain. Beyond preparedness stocking, facilities can also implement a variety of strategies to permit conservation, reuse, adaptation, and substitution resources, doing so in a way that minimizes the impact on clinical care.⁵ Potential medical care resources that may become scarce during a disaster or emergency include physical items (e.g. medical supplies, drugs, beds, equipment) services (e.g. medical treatments, nursing care), and health care personnel (e.g. physicians, nurses, psychologists, laboratory technicians, EMS providers, and other essential workers).^{6,7}
- **Surge Capabilities:** The ability to manage patients requiring unusual or highly specialized medical evaluation and care. Surge requirements span the range of specialized medical and health services (expertise, information, procedures, equipment, or personnel) that are not normally available at the location where they are needed (e.g. pediatric care provided at non-pediatric facilities or burn care services at a non-burn center). Surge capability also includes patient problems that require special intervention to protect medical providers, other patients and the integrity of the medical facility (ASPR, 2010b).⁸
- **Surge Capacity:** The ability to evaluate and care for a markedly increased volume of patients – one that challenges or exceeds normal operating capacity. The surge requirements may extend beyond direct patient care to include such tasks as extensive laboratory studies or epidemiological investigations (ASPR, 2010a).⁸ Refer to Section VII as well.

⁴ American Hospital Association. Model Hospital Mutual Aid Memorandum of Understanding. <http://www.aha.org/content/00-10/ModelHospitalMou.pdf>

⁵ Institute of Medicine of the National Academies. Guidance for Establishing Crisis Standards of Care for Use in Disaster Situations – A Letter Report (2009). 14-15.

⁶ U.S. Department of Health and Human Services. Public Health Emergency. Allocation of Scarce Resources during Mass Casualty Events.

⁷ Public Health Emergency Preparedness – State's Authority to Ration Ventilators during Pandemic – Physician Immunity (2015), 160-189.

⁸ Institute of Medicine of the National Academies. Crisis Standards of Care: A Systems Framework for Catastrophic Disaster Response – Introductions and CSC Framework (2012). 1-40.

- C. The following table assists with anticipating the demands and possible coping strategies in each resource category (space, staff, supplies) under each type of risk event (low, moderate, high).

Implications of the Care Capacity Continuum for Resources

	Low Risk, Low Impact	Moderate Risk, Moderate Impact	High Risk, High Impact
Space	<ul style="list-style-type: none"> Expand hours and use procedural spaces for out-of-hospital care (e.g., surgery and procedure center recovery areas) (Chung et al., 2011; Scarfone et al., 2011) Use postanesthesia care areas for inpatient capacity 	<ul style="list-style-type: none"> Use operative spaces for inpatient care Use alternate care sites to divert outpatients (e.g., "flu centers") (Cruz et al., 2010) or provide basic nonambulatory care (hospital overflow) 	<ul style="list-style-type: none"> Use cot-based care in flat-space areas Make major changes to admission criteria (e.g., no admission for cardiac rule-outs if no electrocardiogram [ECG] changes and normal troponin)
Staff	<ul style="list-style-type: none"> Change documentation requirements Delegate nonclinical duties (e.g., meal serving) to administrative or other staff 	<ul style="list-style-type: none"> Change staffing patterns, hours, or supervision Change frequency of clinical assessments (e.g., vital signs based on clinical changes) 	<ul style="list-style-type: none"> Provide just-in-time training to staff to allow them to provide lower-impact interventions and overall patient care (e.g., inhaler administration, change of burn dressings) so specialty staff can concentrate on higher-impact interventions (e.g., ventilator management, burn debridements)
Supplies	<ul style="list-style-type: none"> Implement conservation strategies (e.g., restrict oxygen use to those that have hypoxia) Recommend substitute medication classes where possible 	<ul style="list-style-type: none"> Adapt medications or supplies to the incident (e.g., use of BiPAP or selected anesthesia machines as ventilators) Reuse otherwise disposable products that can easily be cleaned or disinfected (e.g., cervical collars, tourniquets) 	<ul style="list-style-type: none"> Reuse products that require high-level disinfection or sterilization (e.g., central lines, ventilator circuits) Reallocate medications or supplies to those who will derive the greatest benefit and/or make the least demand on resources (duration of use or amount used for outcome)

Source: Institute of Medicine, 2009 Crisis Standards of Care, Volume 4 p. 8.

- D. Strategies to address the utilization of scarce resources

Strategies for Maximizing Scarce Resources	
Substitute	Use an essentially equivalent facility, professional, drug or device for the one that would be available.
Adapt	Use a facility, professional, drug, or device that is not equivalent, but provides the best possible care.
Conserve	Use lower dosages or change practices (minimize use of oxygen by using air for nebulizers)
Reuse	Use single use items again, after appropriate disinfection or sterilization.

Optimize Allocation

Allocate resources to patients whose need is greater or whose prognosis is more likely to result in a positive outcome with limited resources.

Sample Strategies to Address Resource Shortfalls

	Definition	Example*
Prepare	Plan and train for responses and emergency patient care, anticipate potential resource shortfalls and likely adaptive strategies	Cache equipment and common pharmaceuticals (e.g., narcotic analgesics, burn dressings, ventilators) (24), pre-incident mutual aid agreements with other facilities, and plans for staff and space adaptations in place
Substitute	Functionally equivalent device or supply used	Benzodiazepines substituted for other sedation agents, alternate antibiotics when first-line unavailable
Conserve	Restrictions are placed on the use of therapies or interventions to preserve supply	Oxygen is used only for patients with documented hypoxia
Adapt	Re-purpose a medical device	Saturation monitors with rate alarms used in lieu of full-featured monitors, anesthesia machines used for temporary ventilators
Reuse	Re-use a device with appropriate cleaning, disinfection, or sterilization	Re-use of cervical collars, nasogastric tubes, and other supplies
Re-allocate	Prioritization of therapy to those patients with the best chance of a good outcome, most likely to benefit, or with the least resource investment required	Treatment of subset of patients with vaccine/anti-viral treatments, prioritization of patients to receive mechanical ventilation

*Note that these examples may be carried across the conventional/contingency/crisis continuum to reflect their impact on patient care. For more detailed information, see <http://www.health.state.mn.us/oepr/healthcare/standards.pdf>.
SOURCE: IOM, 2009, p. 54.

Source: Institute of Medicine, 2009 Crisis Standards of Care, Volume 4 p. 15.

E. Potentially Scarce Resources by Category

1. Beds: Adult and Pediatric ICU beds
2. Ventilators
3. Cardiac Monitors & Telemetry
4. ECMO and Selective Medical Procedures
5. Vascular Access Devices
6. Health care Providers: Staffing Levels and Staff Mix
7. Drugs / IV Fluids
8. Wound/Burn Care Supplies
9. Medical Transport

F. Triage

During a CSC event, the hospital will have to implement triage guidance to address a surge of patients received.

1. **Primary Triage** – is utilized when a person presents at the hospital without EMS interaction. The best method is START for adults and JumpStart for pediatrics or the hospital emergency department's method.
2. **Secondary Triage** – Utilize after the initial assessment and medical interventions have taken place. It is recommended that a medical professional complete this secondary triage. This triage is utilized to determine the need and priority for the operating room, scanning and other diagnostic testing or procedures.
3. **Tertiary Triage** – Tertiary triage occurs after the primary and secondary triage. Tertiary triage is done in a hospital to prioritize patients for ICU admission if needed.

G. CSC Criteria for ICU Admission

Needs a Ventilator

- Refractory hypoxemia defined as an SpO₂ less than 90% on a non-rebreather
- Respiratory acidosis (pH less than 7.2)
- Clinically impending respiratory failure
- Inability to protect or maintain airway

Hypotension

- Systolic blood pressure less than 90mmHg or relative hypotension, evidence of shock, altered level of consciousness
- Refractory to volume resuscitation and requiring vasopressor or inotropic medication

VI. Region III Overall Response Flow Process through its Incident Command System

This section provides guidance to the Coalition's incident command system (ICS) and its team members to coordinate its regional response to medical surge capacity, crisis standards of care, and allocation of scarce resources for the applicable mass casualty incident. This flow process uses a life cycle²⁰ concept that recognizes a disaster has a beginning and end. The flow process incorporates four (4) phases (e.g., surveillance, pre-incident response, incident response, and recovery) to allow the ICT members to organize themselves on how to respond to a disaster in a chronological manner from beginning to end of its life cycle.

²⁰Johns Hopkins Hospital: Life Cycle Concept/Response Flow Process (2008)

A. Surveillance

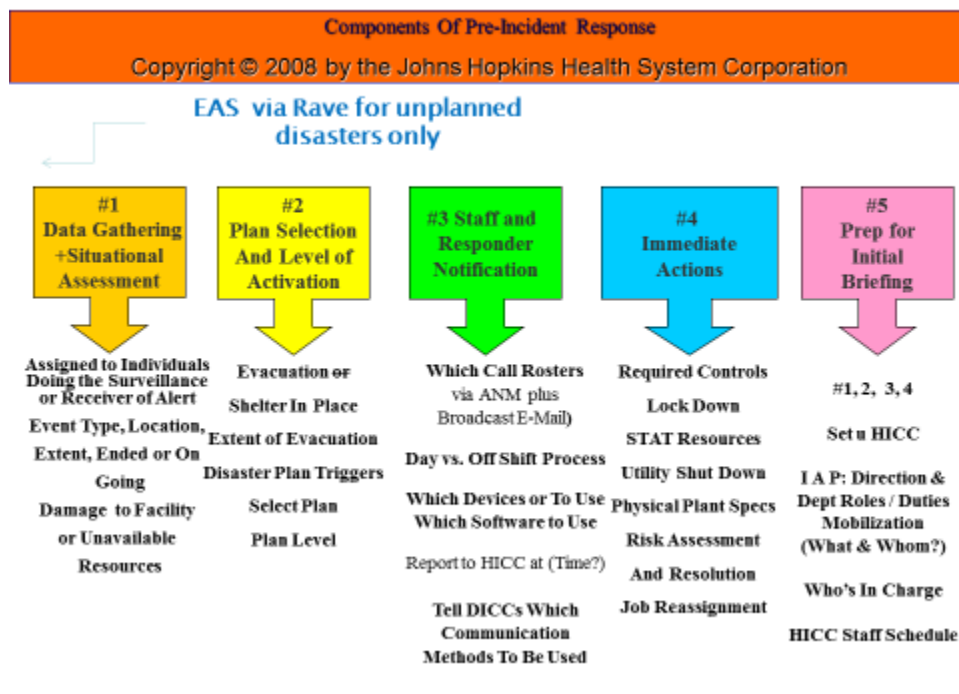
1. A system of surveillance and its activities and procedures should be available 24 hours a day and 7 days a week, especially during the off shifts (weekday evenings/nights, weekends, and holidays). Region III must be ready to respond to a mass casualty incident by activating its mutual aid responsibilities and coordinate medical surge plans or CSC with

its member hospitals and local jurisdictional agencies. When necessary, healthcare facilities that require additional bed capacity would coordinate requests through MIEMSS and Region III.

2. For unplanned disasters, healthcare facilities should request mutual aid through MIEMSS and/or Region III if resources are not adequate to meet patient care needs.

B. Pre-Incident Phase (see Table below)

1. Implement tasks and response procedures occurring during normal, daily operations and off shifts (weekday evenings, nights, weekends, and holidays) to support its membership.
2. Regionally monitor for any planned event where a mass casualty incident may occur which would necessitate additional bed capacity approval.



C. Response Phases – [Refer to JH EPRI (Epidemic Pandemic Respiratory Illness) Phase and Stage Matrix]

1. Initial Response Phase

- a) Activate emergency operations plans.
- b) Determine what actions are required to provide immediate patient life-saving interventions and protective measures.
- c) Assembly of the Incident Command Team
 - i. Brief Coalition members and external partners with most up-to-date initial situational awareness, associated impact, and challenges

2. Ongoing Response Phase

- a. Track situational awareness
- b. Assess and anticipate impact to the organization or health system
- c. Implement appropriate actions to resolve identified challenges (adapt/allocate)
- d. Advise staff through department leaders as to how to best operate under current conditions
- e. Analyze whether or not current actions are resolving the identified issues. If not, escalate mitigation procedures (resource shortage threshold)
- f. Identify triggers that indicate when specific medical treatments, infrastructure, services cannot be performed due to a lack of resources and therefore triage decisions determine the level of care (resource triage threshold)*
- g. Determine point of recovery and a return-to-readiness

*Note: Decision framework to ASR is a separate project is being planned that will start once the award letter from NDH is received by the Project Team (JHU School of Medicine Pulmonary Critical Care Division, Johns Hopkins Medicine OEM, UPMC Center for Health Security and JH Berman Institute)

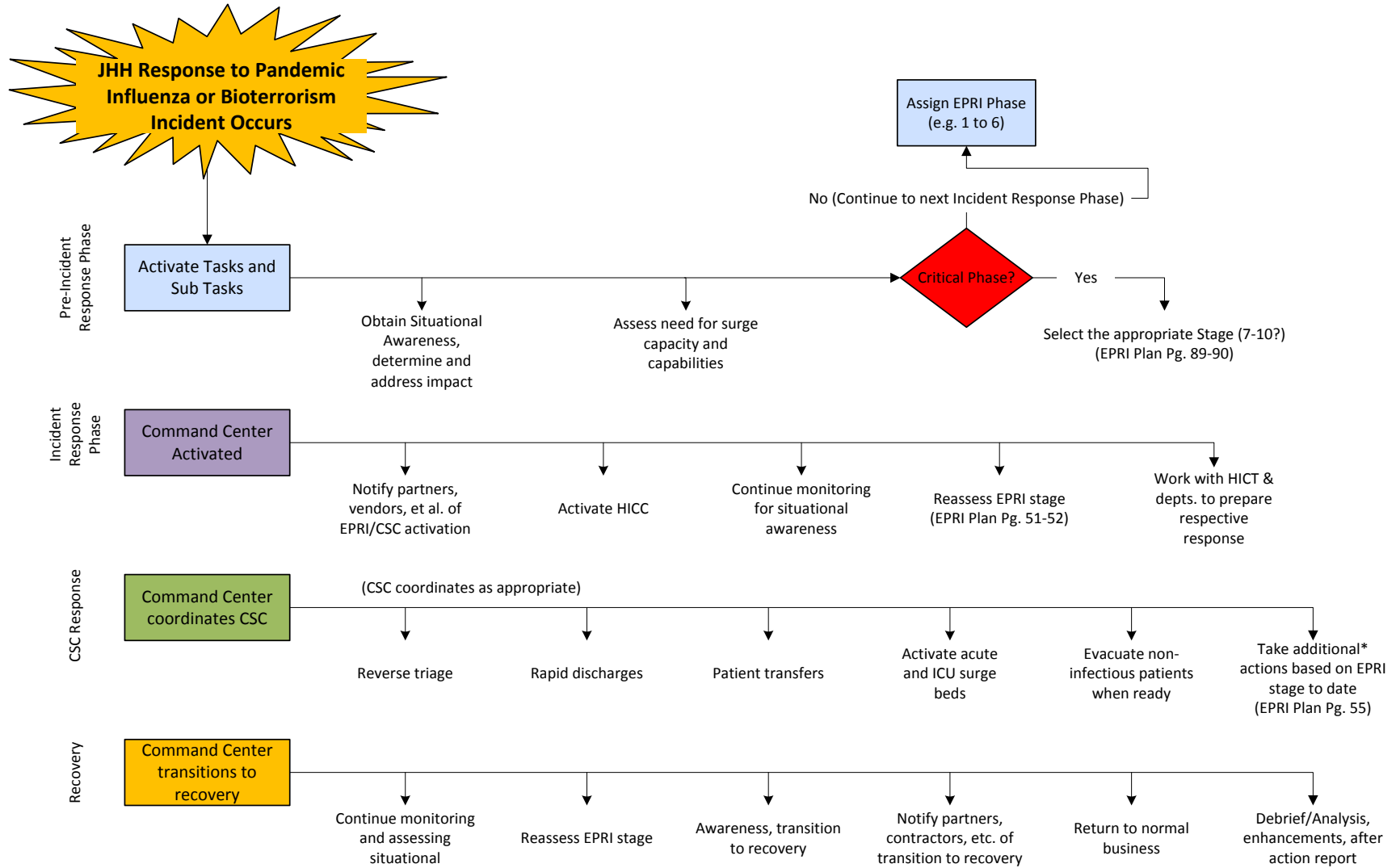
D. Recovery

- 1. Activities to return facility back to daily operations.
- 2. Conduct debriefings of staff, analysis of operations, and identify recommendations for review and approval to revise established plans, policies, and procedures (After Action Review and Improvement Plan).
- 3. Obtain recertification, when indicated, from NDH Office of Health Care Quality to reopen inpatient beds

Johns Hopkins EPRI Phases & Stages

Geographical Distribution of cases	World	North America	Regional	Johns Hopkins Enterprise	John Hopkins Hospital
	Confirmed human outbreak with sustained person to person transmission U.S. Stage 1,2, or 3 WHO 4 or 5	First human cases in the U.S., Canada, or Mexico U.S. Stage 4 or 5 WHO Phase 6	Cases spread throughout MD, DC, DE, V, WV, PA, and NYC U.S. Stage 5 or WHO 6	Cases within the Health System, or the University including APL	Cases within the Hospital
Severity					
Low	Alert Phase Routine JHH Respiratory Virus Policy IFC 02 (no HICC)	Alert Phase <u>Stage 1 -2 (No HICC)</u> #2: Staff Need OHS Eval before returning to work Dept Cohort Units If No More Isolation Rooms	Transitional Phase <u>Stage 3 (No HICC)</u>	Transitional Phase <u>Stage 4</u>	Transitional Phase <u>Stage 5 or 6</u> Same as # 4 and #5 #6: Cohort HCWs for Pt Care; Routine Staff Educ on Isolation/Don PPE w Buddy
Moderate Low Infectivity Rate AND High Fatality Rate OR High Infectivity Rate AND Low Fatality Rate	Alert Phase <u>Stage 1-2 (No HICC)</u> Resp Scrn: Outpt, Inpt and ED at Triage EPRI ? to CCEL > NPA HCW PPE + Isolation Droplet Precautions Staff Stay Home until 48 Hrs Afebrile	Transitional Phase <u>Stage 3 (No HICC)</u>	Transitional Phase <u>Stage 4 -6</u> #5/6: Outpts only tested if clinically indicated Hand Hygiene Mandated On Entry/Leaving Pt Rm Mandatory reporting to OHS for All Hopkins Staff with Symptoms	Critical Phase <u>Stage 8</u> Same as # 7: Educ Inpts No Non-Pt Visitors Non-Infect to Weinberg ICU & Acute Care Cohort HCWs w Confirmed Patients Surg Mask for BMT/Leuk	Critical Phase <u>Stage 9</u> Same as # 8 HEICAdmit Approval Highest Available PPE Screeners w Surg Mask Evacuate Other Bldgs D/C Academic and Research Duties?
High High Infectivity Rate AND HIGH Fatality Rate	Transitional Phase <u>Stage 3</u> Same as #1 and #2 Scrn at Reception (+ Visitors) Whichever First Don Mask & If Possible Cohort Pts /Visitors if EPRI? Activate Modified Inpt Flow? Suspend Group Activities?	Transitional Phase <u>Stage 4 -6</u> Same as #3 Physically separate patients w symptoms Mandatory NPA and Precautions	Critical Phase <u>Stage 7</u> Limited Access Entrance Screening Required Hand Hygiene Open FIC , Fatality Mgt Evac/Set up Nelson Bldg Non-Inf to Weinberg Staff Work from Home? Curtail SoM Research?	Critical Phase <u>Stage 8 (continued)</u> Limit Access to Inpatient Units Furlough Staff 1.5x Incubation Period	Critical Phase <u>Stage 10</u> Student Rotations Suspended Research Enterprise Operations Curtailed

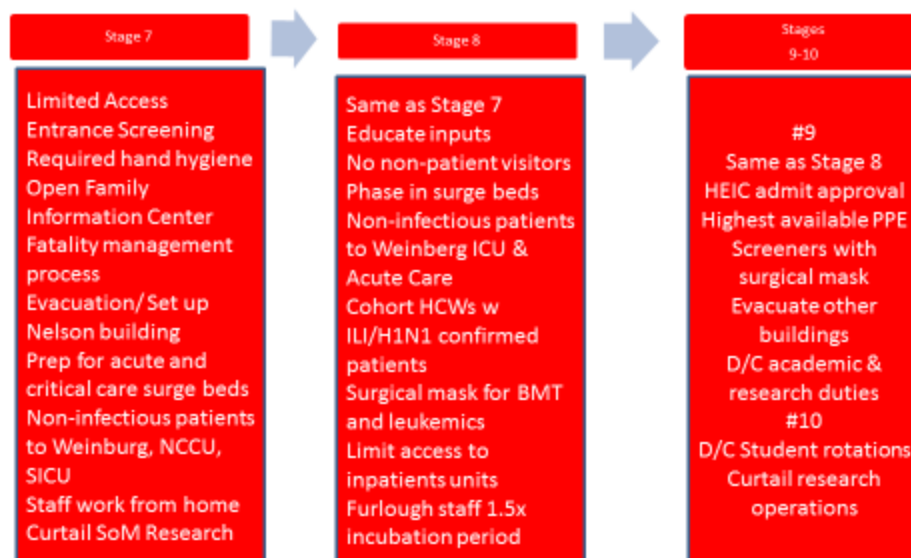
JHH Crisis Standards of Care Response Flow Diagram



*See next diagram

JHH CSC Response Tasks by EPRI

Critical Phase: Stages 7-10



Section VII: Medical Surge Capacity Survey II

Region III H/M Coalition: Project Subcommittee: Hospital Surge Capacity Survey (April 21, 2016)

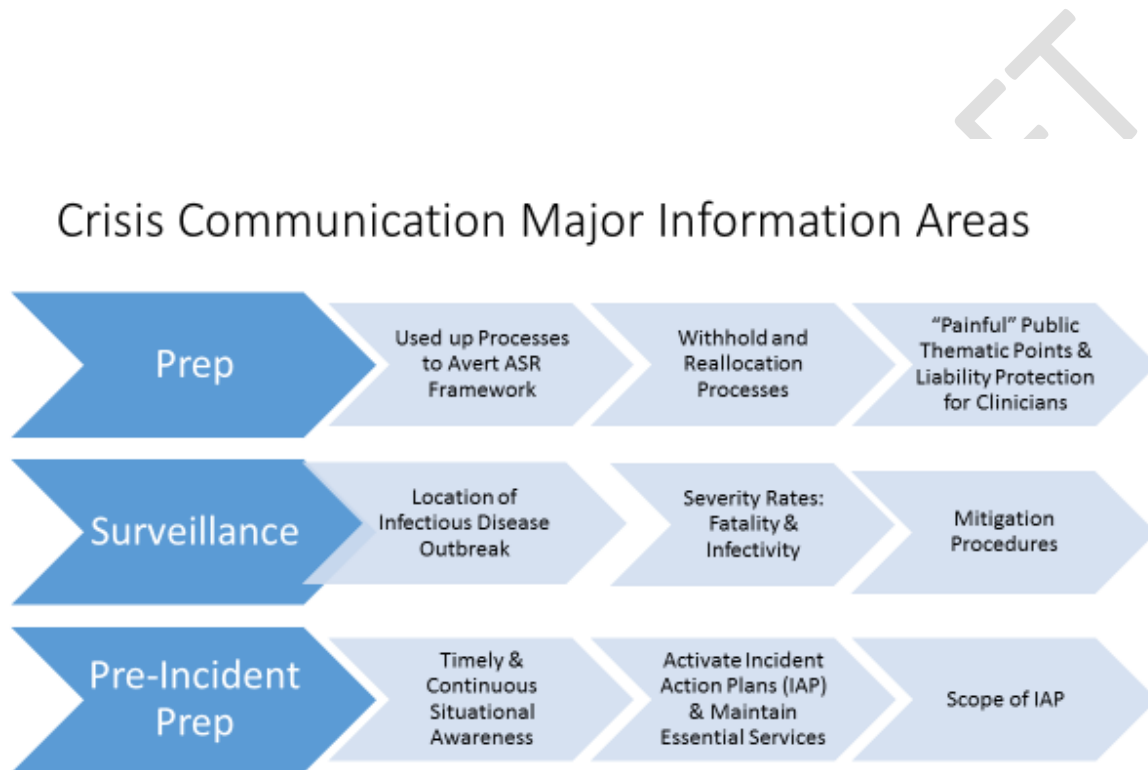
1. Hospital name
2. Person filling out survey
3. E-mail address (for person filling out survey)
4. Total # staffed inpatient beds
5. # of acute care medical and surgical surge beds
6. # ICU or Critical Care Beds
7. # of medical acute care beds (do not include # of Obstetrics / Gynecology beds)
8. # of surgical acute care beds
9. # of Obstetrics / Gynecology beds
10. # of pediatric acute care beds
11. # of adult psychiatry beds
12. # of pediatric psychiatric beds
13. # of total ICU beds (include all specialties: CCU, MICU, NCCU, SICU, etc.)
14. # of neonatal ICU (NICU) beds
15. # of pediatric ICU (PICU) beds
16. # of PACU Slots
17. # of Emergency Dept. (ED) exam rooms
18. # of ED surge capacity rooms/stretchers
19. # of ED observation beds
20. # of Adult ED psychiatric exam rooms
21. # of Pediatric ED psychiatric exam rooms
22. # of ED psychiatric surge capacity
23. # Negative Pressure/Isolation beds
24. # Negative Pressure units
25. # Negative Pressure buildings
26. What is your average daily percent of inpatient occupancy (70-75%, 75-80, 80-85, 85-90, > 90 %?)
27. Has your hospital achieved 20 % of your total beds for inpatient surge capacity? Yes or No
28. Has your hospital achieved greater than 20 per cent? Yes or No
29. How much greater than 20% (30-40, 40-50, 50-60, 60-70, > 70%)
30. Does a formalized plan exists to activate your surge capacity beds? Yes or No
31. Can you activate your 20 % acute care surge beds in 4 hours? Yes or No
32. Can you activate your 20% ICU care surge beds in 4 hours? Yes or No
- **Do you have 20% surge for the following specialty areas... **
33. Obstetrics and Gynecology: Yes or No. Do you also have more than 20%? If yes, how much more _____
34. Pediatric acute care beds: Yes or No. Do you also have more than 20%? If yes, how much more _____
35. Adult psychiatry beds: Yes or No. Do you also have more than 20%? If yes, how much more _____
36. Pediatric psychiatric beds: Yes or No. Do you also have more than 20%? If yes, how much more _____
37. Neonatal ICU beds: Yes or No. Do you also have more than 20%? If yes, how much more _____
38. Pediatric ICU beds: Yes or No. Do you also have more than 20%? If yes, how much more _____
39. PACU Slots: Yes or No. Do you also have more than 20%? If yes, how much more _____
40. ED exam rooms: Yes or No. Do you also have more than 20%? If yes, how much more _____
41. ED observation beds: Yes or No. Do you also have more than 20%? If yes, how much more _____
42. Adult ED Psych exam rooms: Yes or No. Do you also have more than 20%? If yes, how much more _____

43. Pediatric ED Psych exam rooms: Yes or No. Do you also have more than 20%? If yes, how much more ____
44. Are your surge capacity beds part of your complement of existing inpatient beds? Yes or No
45. Are you surge capacity beds consists of a stretcher? Yes or No
- If the answer is yes to question #23, what percentage of your surge capacity beds are stretchers ((20-29, 30-39, 40-49, and 50-59, 60-69, equal or greater than 70%)

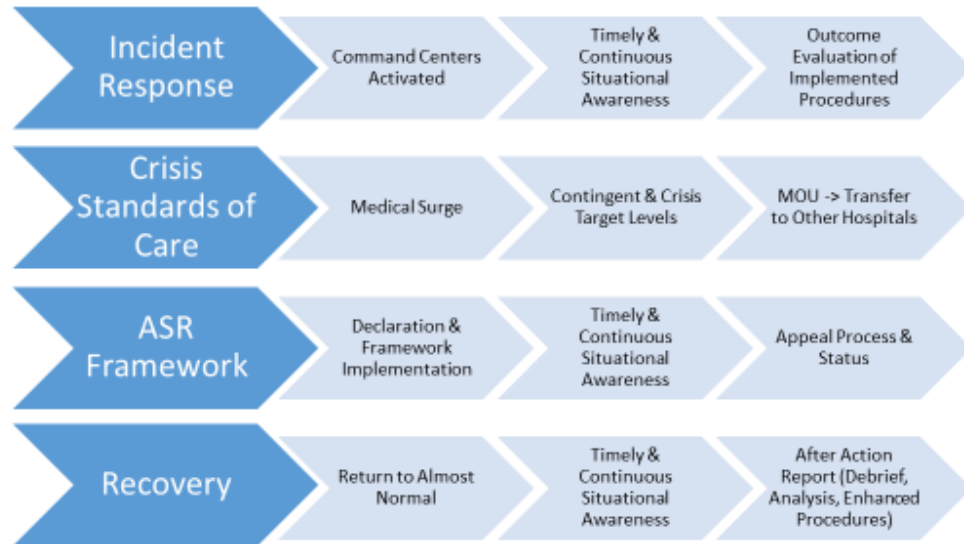
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Appendix B – Crisis Communication: Figure 1

The following two figures describes examples of key topics or themes by each phase within a life cycle in preparing and responding to a declaration of a framework to allocate scarce medical resources. These examples would then serve to develop appropriate documents to communicate to various sectors prior to, during, and after the declaration.



Crisis Communication Major Information Areas



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Appendix C: Glossary

ACCP – American College of Chest Physicians is the global leader in clinical chest medicine, representing more than 19,000 members who provide patient care. ACCP also provides innovative education for health care professionals to advance best patient outcomes.

Allocation of Scarce Medical Resources – Analysis of how scarce resources are distributed among patients, and how scarce equipment, supplies, space, and staff are apportioned among identified patients. The provision of medical care under catastrophic disaster conditions requires considerable pre-event planning, along with the recognition that the delivery of healthcare services will likely change due to the potential scarcity of required resources. Beginning in 2009, Assistant Secretary of Preparedness and Response (ASPR) has focused significant attention on “crisis standards of care,” spearheaded by the issuance of three reports by the Institute of Medicine of the National Academies. Work performed under this topic area provides a roadmap for use during catastrophic events. Coordination of emergency response system planning is critical to ensuring the likelihood of successful health and medical outcomes under chaotic conditions, thus limiting patient morbidity and mortality. The standards of care proposed under the delivery of such conditions must represent a “reasonable” approach to healthcare service delivery, albeit under some very unique and challenging conditions that simply do not exist under conventional disaster conditions. With a framework rooted in fundamental public health tenets, decisions regarding the delivery of care must be made focused on population, not necessarily individual, outcomes.

Catastrophic Public Health Emergency – a declaration releases resources meant to handle an actual or potential public health crisis. Recent examples include incidents of flooding, severe weather, the [2009 H1N1 influenza outbreak](#), and Ebola

Community (Public) Engagement – refers to the process by which [community benefit organizations](#) and individuals build ongoing, permanent relationships for the purpose of applying a collective vision for the benefit of a community. While [community organizing](#) involves the process of building a grassroots movement involving communities, community engagement primarily deals with the practice of moving communities toward change, usually from a stalled or similarly suspended position

Co-morbidities – the presence of one or more additional [diseases](#) or disorders [co-occurring](#) with (that is, [concomitant](#) or [concurrent](#) with) a primary disease or disorder; in the [countable](#) sense of the term, a **comorbidity** (plural **comorbidities**) is each additional disorder or disease

Critical Care – [Critical care medicine](#) or intensive-care medicine, a branch of medicine concerned with life support for critically ill patients

Deliberative Democracy – or **discursive democracy** is a form of [democracy](#) in which [deliberation](#) is central to [decision-making](#). It adopts elements of both [consensus decision-making](#) and [majority rule](#). Deliberative democracy differs from traditional democratic [theory](#) in that authentic deliberation, not mere [voting](#), is the primary source of legitimacy for the [law](#)

Emergency (Management) Planners – The organization and management of resources and responsibilities for dealing with all aspects of emergencies, in particularly preparedness, response and rehabilitation led and coordinated by emergency managers or planners. Emergency management involves plans, structures and arrangements established to engage the normal endeavors of

government, voluntary and private agencies in a comprehensive and coordinated way to respond to the whole spectrum of emergency needs. This is also known as disaster management

Ethics Committee – The Ethics Committee is an interdisciplinary committee charged with assisting leadership in ensuring consistency between mission and values, organizational behaviors and clinical practice. It has three primary functions, which include conducting education on ethical issues, recommending policies that are ethically important, and conducting case reviews with respect to ethical issues

ESF-8 – Emergency Support Function #8 – Public Health and Medical Services provides the mechanism for coordinated Federal assistance to supplement State, tribal, and local resources in response to a public health and medical disaster, potential or actual incidents requiring a coordinated Federal response, and/or during a developing potential health and medical emergency. Public Health and Medical Services include responding to medical needs associated with mental health, behavioral health, and substance abuse considerations of incident victims and response workers.

Health Care Coalition – U.S. Department of Health and Human Services (HHS) has defined healthcare coalitions as: A collaborative network of healthcare organizations and their respective public and private sector response partners that serve as a multiagency coordinating group to assist with preparedness, response, recovery, and mitigation activities related to healthcare organization disaster operations. The purpose of a healthcare coalition is a healthcare system-wide approach for preparing for, responding to, and recovering from incidents that have a public health and medical impact in the short and long-term. The primary function of a healthcare coalition is sub-state regional healthcare system emergency preparedness activities involving the health and medical members. This includes planning, organizing, equipping, training, exercises and evaluation

Incident Commander – the person responsible for all aspects of an emergency response; including quickly developing **incident** objectives, managing all **incident** operations, application of resources as well as responsibility for all persons involved

IOM – Institute of Medicine is an [American nonprofit, non-governmental organization](#). The National Academy of Medicine is a part of the [National Academies of Sciences, Engineering, and Medicine](#), along with the [National Academy of Sciences](#) (NAS), [National Academy of Engineering](#) (NAE), and the [National Research Council](#) (NRC). The IOM or now known as the National Academy of Medicine provides national advice on issues relating to biomedical science, medicine, and health, and serves as an adviser to the nation to improve health. It aims to provide unbiased, evidence-based, and authoritative information and advice concerning health and science policy to policy-makers, professionals, leaders in every sector of society, and the public at large.

Mass Casualty Event (Incident) – A **mass casualty incident** (often shortened to MCI and sometimes called a multiple-**casualty incident** or multiple-**casualty** situation) is any **incident** in which emergency medical services resources, such as personnel and equipment, are overwhelmed by the number and severity of **casualties**

Qualitative Analysis (Research) – is a method of inquiry employed in many different academic disciplines, including in the [social sciences](#) and [natural sciences](#), but also in non-academic contexts including [market research](#), business, and service demonstrations by non-profits.

Surge Capacity – is a measurable representation of ability to manage a sudden influx of patients. It is dependent on a well-functioning incident management system and the variables of space, supplies, staff and any special considerations (contaminated or contagious patients, for example)

Ventilators – Medical ventilator (or simply **ventilator** in context) is a [mechanical ventilator](#), a machine designed to move breathable air into and out of the lungs, to provide breathing for a patient who is physically unable to breathe, or breathing insufficiently. While modern ventilators are computerized machines, patients can be ventilated with a simple, hand-operated [bag valve mask](#). Ventilators are chiefly used in [intensive care medicine](#), [home care](#), and [emergency medicine](#) (as standalone units) and in [anesthesia](#) (as a component of an [anesthesia machine](#)).

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Appendix D - ASR Framework Project: Advisory Council Session

May 9, 2017

I. Project Team

1. Lee Daugherty-Biddison, MD, MPH, ASR Project Leader, JHH DOM & Division of Pulmonary & Critical Care
2. Eric Toner, MD, JH Center for Health Security
3. Monica Schoch-Spana, PhD, JH Center for Health Security
4. Howard Gwon, MS, JH Medicine Office of Emergency Management
5. Alan Regenberg, MBE, JH Berman Institute of Bioethics

II. Expert Work Group

1. Megan Allen, Maryland Hospital Association
2. Christina Hughes, Med Star Institute One, Region III Health & Medical Coalition
3. Chrissie Juliano, MPP, NACCHO Big Cities Health Coalition
4. Darren Mareiniss, MD, JD, Georgetown University and FSMC Emergency Medicine and Ethics Committee
5. Cynda Rushton, PhD, RN, JH Berman Institute, JHU School of Nursing
6. Carl Shanholtz, MD, UMMC MICU & Resp. Care and UM SOM Pulmonary & Critical Care and DOM
7. Jack Schwartz, JD, x-Maryland Attorney General Office and JHH Ethics Committee
8. Jacqueline Toner, Ph.D., ASR Community Engagement Projects

III. Advisory Council

1. Monique Anawis, MD, JD, Office of Attorney General Madigan
2. Brooke Courtney, JD, MPH, Office of Counterterrorism and Emerging Threats
3. Kelly Fadrowski, MS, RN, University Maryland Medical System
4. Randy Linthicum, MS, NRP, MIEMSS Emergency Operations
5. Carl Eriksson, MD, OHSU Doernbecher Children's Hospital
6. Mary King, MD, Seattle Children's Trauma PICU and Harborview Medical Center
7. Ian Morris, RN, Johns Hopkins Hospital MICU
8. Tia Powell, MD, Montefiore Einstein Center of Bioethics and Albert Einstein College of Medicine Clinical Psychiatry
9. Pastor Prentice, Zion Baptist Church
10. Olivia Ross, Lifebridge Health System
11. Lewis Robinson, MD, PhD, University of Maryland Medical Center Critical Care
12. Anita Tarzian, PhD, RN, Maryland Health Care Ethics Committee Network
13. Leonard Taylor, University of Maryland Medical Center
14. Peter Terry, MD, JHU SOM Pulmonary and Critical Care Medicine, JHH Ethics Committee
15. Richard Waldhorn, MD, Georgetown University Dept. of Medicine

-
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- ² Halpern NA, Pastores SM. Critical care medicine in the United States 2000-2005: an analysis of bed numbers, occupancy rates, payer mix, and costs. *Crit Care Med* 2010; 38(1):65-71.
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- ⁶ Zahner, S J, Corrado SM. Local health department partnerships with faith-based organizations. *J Public Health Manag Pract* 2004;10(3): 258-65.
- ⁷ Powell T, Christ KC, Birkhead GS. Allocation of ventilators in a public health disaster. *Disaster Med Public Health Prep* 2008;2:20-26.
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- ¹³ Sandrock CE. Care of the Critically Ill and Injured During Pandemics and Disasters: Groundbreaking Results from the Task Force on Mass Critical Care. *CHEST Journal*. 2014 Oct 1;146(4):881-3.
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- ¹⁷ Osler T, Glance LG, Hosmer DW. Simplified estimates of the probability of death after burn injuries: extending and updating the baux score. *J Trauma*. 2010 Mar;68(3):690-7.
- ¹⁸ Maryland law contemplates a wide variety of emergency situations, but this is the one most pertinent to this report.
- ¹⁹ The Catastrophic Health Emergencies Act is codified in Title 14, Subtitle 3A of the Public Safety Article of the Maryland Code. The definition of “catastrophic health emergency” is in § 14-3A-01(b).
- ²⁰ § 14-3A-01(c)(1).

²¹ § 14-3A-02.

²² To save time, the State should prepare in advance a legally sufficient proclamation and implementing orders reflecting the most likely scenario (for example, pandemic influenza). Then, when the need arises, the drafts can be quickly modified to incorporate the pertinent facts.

²³ § 14-3A-03.

²⁴ § 18-903(b) of the Health-General Article.

²⁵ § 14-3A-03(b)(2).

²⁶ Opinions of the Attorney General. Public Health Emergency Preparedness – State’s Authority to Ration Ventilators during Pandemic – Physician Immunity. 2015; 100:160-189. Retrieved 7-21-2017 from <http://www.marylandattorneygeneral.gov/Opinions%20Documents/2015/100oag160.pdf>.
<http://www.marylandattorneygeneral.gov/Opinions%20Documents/2015/100oag160.pdf>.

²⁷ AG Opinion, p. 170.

²⁸ The Governor unquestionably has authority to mandate adherence to such directives. § 14-3A-03(c).

²⁹ AG Opinion, pp. 173-175.

³⁰ AG Opinion, pp. 178-179.

³¹ AG Opinion, pp. 180-181.

³² *Jacobson v. Massachusetts*, 197 U.S. 11, 30 (1905).

³³ AG Opinion, pp. 183-185.

³⁴ Mareiniss DP, Levy F, and Regan L. ICU triage: the potential legal liability of withdrawing ICU care during a catastrophic event. *Am J Disaster Med* 2011;6:329-338.

³⁵ § 14-3A-06.

³⁶ AG Opinion, p. 185.

³⁷ *Rite Aid Corp. v. Hagley*, 824 A.2d 107, 117 (Md. 2003). In this case, the Maryland Court of Appeals was interpreting the “good faith” immunity provision in the mandatory child abuse reporting statute.

³⁸ *Catterton v. Coale*, 579 A.2d 781, 783 (Md. App. 1990).

³⁹ AG Opinion, p. 188.